CRM # 76119
Rocky Mount City Hall & Police Department Air Handler and Pump Replacements

BID PRICE RESPONSES DUE:
TUESDAY, JANUARY 28, 2014 BY 2:00 P.M.

IN CONFERENCE ROOM # 3

CITY OF ROCKY MOUNT PURCHASING OFFICE
331 South Franklin Street
Rocky Mount, N.C. 27802

City of Rocky Mount
Rocky Mount City Hall & Police Department Air Handler & Pump Replacements

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ADVERTISEMENT FOR BIDS
CITY OF ROCKY MOUNT, NORTH CAROLINA

Pursuant to Section 143-129 of the General Statutes of North Carolina, sealed proposals endorsed "CRM # 76119 – Rocky Mount City Hall & Police Department Air Handler and Pump Replacements" will be received by the City of Rocky Mount Purchasing Office in the Administrative Complex, 331 S. Franklin Street, until 2:00 P.M., on Tuesday, January 28, 2014 at which time they will be publicly opened and read in Conference Room #3, located on the second floor of the Administrative Complex.

A pre-bid meeting will be held on Thursday, January 16, 2014 at 10:00 A.M. in Conference Room#3 located on the second floor of the Administrative Complex.

The City of Rocky Mount is seeking 5% minority participation on this project.
Minority business owners or their representatives are urged to attend the pre-bid to submit a bid as a single prime contractor, subcontractor, supplier and to meet single prime contractors who may submit a bid on the project.

Instructions for submitting bids and complete specifications for the work, equipment, supplies or services desired may be obtained at the office of the City Purchasing Manager in the Administrative Complex during regular office hours between 8:30 A.M. and 5:00 P.M., Monday through Friday.

The City of Rocky Mount reserves the right to reject any and all bids. The City of Rocky Mount will not discriminate against any bidder submitting a bid because of race, creed, color, national origin or handicap.

CITY OF ROCKY MOUNT

Delton L. Farmer
Purchasing Manager

CITY OF ROCKY MOUNT
Rocky Mount City Hall & Police Department Air Handler & Pump Replacements
CRM #76119

The City of Rocky Mount is seeking bids from qualified contractors to perform all requirements for at the Administrative Complex located at 331 South Franklin Street. The Company awarded the contract shall be responsible for providing all labor, materials, equipment, supplies, licenses, permits, bonds, insurance and all else needed to properly perform this contract for inspection and acceptance by the City of Rocky Mount. The Company awarded the contract shall be responsible for securing all permits needed to perform this project.

All bids are due back to the City of Rocky Mount Purchasing Office by 2:00 p.m. on Tuesday, January 28, 2014. Bid responses may be mailed to the Purchasing Division, 331 S. Franklin Street, Rocky Mount, N.C. 27804. Bids may also be delivered to the Purchasing Office located on the 4th floor of the Administrative Complex, 331 S. Franklin Street, Rocky Mount, NC 27804.

A pre-bid meeting will be held on Thursday, January 16, 2014 at 10:00 A.M. in Conference Room #3 located on the second floor of the Administrative Complex.

Failure to visit the worksite location will not relieve bidders from performing all requirements of the project if they are determined to be the lowest responsive responsible bidder.

A bid security in the amount of five percent (5%) of the contract sum shall be submitted with each bid. The bid security shall be in the form of cash, a cashier's check or a certified check on a bank or trust company insured by the Federal Deposit Insurance Corporation made payable to City of Rocky Mount. In lieu of making a cash deposit, the bidder may submit a bid bond executed by a corporate surety licensed in North Carolina to execute such bonds. The 5% bid bond amount is to be based on the TOTAL COST for the BASE BID.

A Performance Bond for 100% of the bid award amount will be required of the successful bidder. The Performance Bond is to secure performance of the contract by the successful bidder awarded the contract and shall be in the form of cash, certified check, government securities or bond by a surety licensed to do business in North Carolina.

A Payment Bond for 100% of the bid award amount will also be required of the successful bidder. The Payment Bond is to provide security to those who contributed labor or materials and shall be in the form of cash, certified check, government securities or bond by a surety licensed to do business in North Carolina.

All replacement equipment and supplies used on the installation shall be of new manufacture not refurbished or remanufactured.

INSURANCE REQUIREMENTS

Contractor shall purchase and maintain such comprehensive general liability and other insurance as will provide protection from claims as set forth below which may arise out of or result from Contractor's performance of the work and any other obligations, including his/its indemnity obligations, under this contract, whether such performance is by Contractor, by any subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. All such insurance shall contain a provision that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty (30) days prior written notice has been given to City. All such insurance shall remain in effect until final payment and at all times thereafter when Contractor may be correctly, removing or replacing defective or faulty work. No work shall commence until all such insurance has been approved in writing by the City. The Contractor shall provide a Certificate of Insurance to the Purchasing Office before beginning the contract.

a) Workmen's Compensation
The Contractor shall take out and maintain during the life of this contract workmen's compensation insurance for all employees at the site of the project under this contract.

b) Public Liability and Property Damage
The Contractor shall take out and maintain during the life of this contract such Public Liability and Property Damage Insurance as shall protect him/it, the City as a named insured), and any subcontractor performing work covered by this contract, whether such operation be by himself or by any subcontractor, or by anyone directly indirectly employed by either of them. The amounts of such insurance shall be as follows:

(a) Public Liability Insurance in an amount not less than Two Million Dollar ($2,000,000) in respect to any one accident or disaster an in an amount of not less than One Million Dollars ($1,000,000) in respect to injuries to any one person.

(b) Property damages insurance in an amount of not less than One Million Dollars ($1,000,000).

DEBRIS DISPOSAL

All debris that is manufactured as a result of this contract being performed shall be disposed of in accordance with all Federal, State and Local regulations. All debris is to be maintained on a daily basis in a manner that will not interfere with the daily operations of the Senior Center or the surrounding businesses.

OPENING OF BIDS

Proposals will be received and Bids publicly opened and read at the time(s) and place indicated in the Notice to Bidders. No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of ninety (90) days.

BIDS TO REMAIN OPEN

All bids shall remain open for ninety (90) days after the day of the Bid opening, but Owner may, in his sole discretion, release any Bid and return the Bid security prior to that date.

AWARD OF CONTRACT

Owner reserves the right to reject any and all Bids and waive any and all informalities, and the right to disregard all nonconforming or conditional Bids or counter Proposals.

In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements and alternates and installed prices as requested in the Proposal forms. He may consider the qualifications and experience of Subcontractors and other persons and organizations (including those portions of the work as to which the identity of Subcontractors and other persons and organizations must be submitted. He may conduct such investigations as he deems necessary to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors and other persons and organizations to do the work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time. Owner reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.

If a Contract is to be awarded, it will be awarded to the lowest responsible Bidder whose evaluation by Owner indicates to the Owner that the Award will be in the best interest of the Project.

The Owner will give the apparent successful Bidder a Notice of Award within ninety (90) days after the day of the Bid Opening. The successful Bidder shall execute and return to the Engineer the Contract within fifteen (15) calendar days of the date of Notice of Award of Contract.

In addition, the successful bidder, within the period stipulated in the above paragraph, shall procure, execute and deliver to the Owner and maintain, at his own cost and expense, a Performance Bond and Payment Bond as specified in the Supplementary Conditions.

Failure or refusal of the Bidder whose Proposal is accepted to execute the Contract as hereinbefore provided shall constitute a breach by such Bidder of the Contract created by the acceptance of the Proposal, and in such event, the Owner at this option, may determine that such Bidder has abandoned the Contract. Thereupon such Bidder's Proposal and the acceptance thereof shall be null and void. It is understood by the Bidder, in the event of the annulment of the Award, that the amount of the cash, certified check, or Bid Bond, submitted with the Proposal shall be forfeited to the use of the Owner, not as a penalty, but as liquidated damages.

THAT: The undersigned proposes to enter into a Contract in accordance with this Proposal, the Plans and Specifications and the Contract Documents included herein, for the following price, or prices shown on the following pages.

THAT: It is the intent of these Contract Documents to obtain a Contract based on a Lump Sum Price except where Unit Prices are specifically requested. Where a discrepancy exists between words and numbers in the Bid amount, the written words shall govern.

PROJECT #1

ROCKY MOUNT CITY HALL

AIR HANDLER AHU A-1/2, RAF A-1/2 AND PUMPS CH-5 (P-3) AND CH-10 (P-1) REPLACEMENT REQUIREMENTS

ROCKY MOUNT CITY HALL

AIR HANDLER AHU A-1/2, RAF A-1/2 AND PUMPS CH-5 (P-3) AND CH-10 (P-1) REPLACEMENT

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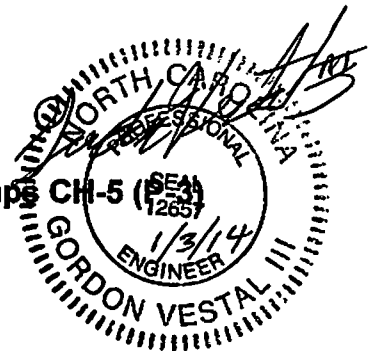
First floor mechanical room AHU A-1/2, RAF A-1/2 and pumps CH-5 (P-3) and CH-10 (P-1) replacement:
City Hall
City of Rocky Mount



Contractor Qualifications:

The Contractor shall provide with his bid, documentation of his experience with projects of a similar scope and magnitude of this project. The Contractor shall also provide contact names of owners of similar projects that he has completed. The Contractor shall maintain an office providing service and sales within 75 miles of the City of Rocky Mount. The Contractor shall warrant his work for a period of one year from the date of completion and acceptance by the owner. Equipment and installation shall have minimum 1 year warranty for parts and labor. Equipment shall have five years parts and material warranty.

Scope of Work: The scope of work shall include the work indicated on the drawings and as described herein and as required for a complete and operational system. The scope of work shall include but not be limited to:

Demolition:

- Remove and dispose of the existing air handling unit AHU A-1/2 and return air fan RAF A-1/2.
- Remove existing discharge damper in AHU A-1/2 supply ductwork.
- Remove and dispose of existing chilled water pumps CH-5 (P-3), and CH-10 (P-1) and associated piping.
- Relocate existing chilled water piping and ductwork as required for removal of existing equipment and installation of new equipment.
- Disposition of all removed or demolished equipment shall be coordinated with the City of Rocky Mount. City shall have the right to retain all or part of materials for future use.
- All material and equipment to be disposed of shall be disposed of in accordance with all Local, State and National codes and environmental regulations.

New Work/Installation:

Work to be performed shall include but not be limited to work shown on the plans and as described herein. Contractor shall include in his price all necessary work and materials to provide a complete and operating system. New air handling unit, return air fan and pump capacities and characteristics shall match that of existing. Refer to included data sheets for new equipment specifications. Air Handling Unit shall be Trane or Owner approved equal. Pump shall be B&G, Taco or Owner approved equal.

Existing AHU A-1/2 specifications
15 500 cfm at 3.75" s.p.
25 hp
480v 3 ph
Cooling coil capacity 426 700 btu/hr EAT 78 deg F LAT 57 deg
50 kw warm up heat
Cooling Coil EWT 44 deg F 65.2 gpm 13.2 water temp rise 3.7 ft hd
EAT 78 deg F DB 65 deg F WB
LAT 57 deg F DB 57 deg F WB

Existing RAF A-1/2 specifications
15 500 cfm at 0.75" s.p.
5 hp
480v 3ph
In-line tube axial fan

Existing Pump CH-5 (P-3) [CH-city tag no. (P-original plan no.)]
63 gpm 30 ft hd 1 1/2 HP 1750 rpm
480 volt 3 phase
Serves Admin Bldg AHU A-1/2

Existing Pump CH-10 (P-1) [CH-city tag no. (P-original plan no.)]
285 gpm 40 ft hd 7 1/2 HP 1750 rpm
480 volt 3 phase
Serves Admin Bldg AHU A-1/2/3/4/5 & AHU A-3/4/5

- Purchase and install new AHU to replace existing AHU A-1/2. AHU shall have VFD with bypass. Provide and install controls and sensors for VFD. AHU shall include but not be limited to: fan section, filter section, cooling coil, heating coil, spacer for future hot water coil, UV light section, and mixing box. Heating coil shall be in reheat position. Electric heat shall have SCR control. Refer to included documents for AHU specifications.
- Connect new AHU to existing chilled water piping and electrical power for motor/VFD and strip heat. Install new CW control valve supplied by control contractor
- Provide new shut off valves and temperature and pressure gages in chilled water piping on each side of cooling coil.
- Provide new ductwork and transitions as required from sound attenuator to AHU and from outside air louver and return ductwork to AHU.
- Connect new AHU to new ductwork and tie new ductwork into existing.
- Purchase and install new return air fan with VFD with bypass to replace existing RAF A-1/2. Provide duct pressure sensor and necessary controls. Refer to included documents for RAF fan specifications.
- Remove internal duct liner from reused ductwork adjacent to AHU and RAF and wrap with insulation in compliance with the North Carolina Energy and Mechanical Codes.

- Provide new base mounted chilled water pumps with variable speed drive to replace existing CH-10. Pump shall be equal in capacity and characteristics to existing pumps. Existing piping and valves shall be replaced with new piping, fittings, strainers and valves. Existing piping shall be removed starting with the return butterfly valve to the pump and from the pump up to and including the supply butterfly valve. New valves, strainers, PETE'S plugs, pressure gages, flexible connections, and unions shall be installed in the new piping to protect the pump and facilitate pump removal.
- Provide new in line pump with variable speed drive and controls to replace existing CH-5. Existing piping shall be replaced on each side of the pump. Strainer, unions and isolation valves shall be installed in the new piping to protect the pump and facilitate removal.
- Contractor shall drain CW systems as required for system work. Upon completion of work the contractor shall drain the entire CW piping systems, flush the systems, clean strainers and refill with treated water. Contractor shall submit third party certification of chemical treatment for each system.
- Purchase and install new return air fan with VFD and bypass to replace existing RAF A-1/2. Provide duct pressure sensor and necessary controls.
- All work shall be performed in compliance with Local, State and National codes.
- Contractor shall obtain and pay for all necessary permits.
- Contractor shall schedule all necessary inspections and inform the owner of the time of inspections.
- Contractor shall coordinate all work with existing conditions.
- Drawings are schematic and shall be used for guidance only. Adjust actual layout, connections and installation to accommodate the actual conditions and equipment.
- Contractor shall coordinate all work with City of Rocky Mount and schedule work so as not to interfere with normal City operation.
- City contacts:
  Building Services: Mike Bissette or Chris Carter
- Install new equipment in compliance with the manufacturer's recommendations.
- Provide manufacturer's recommended clearances for all equipment. All new piping and ductwork shall be installed to allow for service and equipment removal. Reroute existing piping and ductwork as necessary to provide access to all equipment and serviceable parts.
- Provide all piping, wiring, ductwork, and other devices necessary for a complete and operational system.
- Contractor shall provide all power wiring to Air Handling Unit, Fans, Pumps, Variable Frequency Drives, and motors.
- Insulate all new or disturbed piping and ductwork in compliance with the North Carolina Energy Code.

- Drawings are schematic and show the approximate location of equipment and piping. Contractor shall coordinate work with existing conditions.
- Factory Start-Up Services: An authorized factory start up agent is required. At minimum, (2) two days (12 hours) shall be spent on-site to ensure proper unit operation.
- During the start up period, the Contractor shall instruct the owner's representative on proper care and operation of the system and provide the owner with all pertinent manuals and documentation.
- Contractor shall obtain an independent third party air and water balance of the new AHU and chilled water pumps.
- Provide new shut off valves and temperature and pressure gages in chilled water piping on each side of cooling coil.

Work by Others:

DDC Building system controls and control wiring shall be provided by others. Contractor shall coordinate his work with the Control Contractor.

Unit Control Interface: New air handlers and fans shall have capability to interface and communicate with the City of Rocky Mount control system. Unit shall have interface card to allow the Unit to communicate directly with the City of Rocky Mount Control system and through an Ethernet port. All alarms, set points, and other parameters shall be accessible through the City of Rocky Mount Control System.

Warranty: The entire installation shall have a warranty of one year parts and one year labor. The equipment including but not limited to the air handling unit, boilers, variable speed drive and pumps shall have a five year parts and material warranty.

Performance Climate Changer

1/2/2014

Job Name	City of Rocky Mount AHU Replacement
User Name	(T06)JD Howard
Address	Raleigh

Performance Climate Changer AHU-A1/2

Quantity 1

Job Comments

Unless otherwise noted in the product report, performance is certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Air-handling performance data is certified in accordance with AHRI standard 430. Air handlers with plenum fans and vertical draw-thru air handlers where the coil is mounted immediately below the fan section are not covered under the scope of AHRI 430.

All weights and dimensions are approximate. Certified prints on request.

Performance Climate Changer

Unit level options — Module Position: 0

Actual airflow	15500 cfm	Single or front discharge - 1K Hz	86 dB
Unit elevation	0.00 ft	Single or front discharge - 2K Hz	83 dB
Unit size	30	Single or front discharge - 4K Hz	79 dB
Integral base frame	2.5in. Integral base frame	Single or front discharge - 8K Hz	75 dB
UL listed unit	UL listed unit	Inlet and casing - 63 Hz	96 dB
Circuit number 1	Supply fan motor(s)	Inlet and casing - 125 Hz	87 dB
FLA (CV) circuit 1	24.50 A	Inlet and casing - 250 Hz	80 dB
MCA circuit 1	30.63 A	Inlet and casing - 500 Hz	82 dB
MOP circuit 1	55.13 A	Inlet and casing - 1K Hz	76 dB
Fuse size circuit 1	50.00 A	Inlet and casing - 2K Hz	74 dB
Circuit number 2	UV lights 1	Inlet and casing - 4K Hz	69 dB
FLA (CV) circuit 2	12.00 A	Inlet and casing - 8K Hz	66 dB
MCA circuit 2	15.00 A	Ducted inlet - 63 Hz	90 dB
MOP circuit 2	27.00 A	Ducted inlet - 125 Hz	75 dB
Fuse size circuit 2	25.00 A	Ducted inlet - 250 Hz	70 dB
Product group	Indoor unit	Ducted inlet - 500 Hz	72 dB
Dedicated OA wheel - min face velocity	500 ft/min	Ducted inlet - 1K Hz	68 dB
Dedicated OA wheel - max face velocity	880 ft/min	Ducted inlet - 2K Hz	65 dB
HEPA filter - min face velocity	0 ft/min	Ducted inlet - 4K Hz	60 dB
HEPA filter - max face velocity	600 ft/min	Ducted inlet - 8K Hz	55 dB
High voltage location	Right	Casing - 63 Hz	95 dB
Length	120.375 in	Casing - 125 Hz	83 dB
Width	93.500 in	Casing - 250 Hz	77 dB
Installed weight	2904.1 lb	Casing - 500 Hz	90 dB
Rigging weight	2789.6 lb	Casing - 1K Hz	84 dB
Single or front discharge - 63 Hz	96 dB	Casing - 2K Hz	63 dB
Single or front discharge - 125 Hz	93 dB	Casing - 4K Hz	44 dB
Single or front discharge - 250 Hz	87 dB	Casing - 8K Hz	50 dB
Single or front discharge - 500 Hz	89 dB		

Controls and VFD/starter — Module Position: 0

Factory controls package	No factory mount	LCD screen and keypad	No LCD
Automatic Selection	No auto selection	Design sequence - controls	G
Controller mounting	No mount	Prepackaged solution option used	PPS common configuration not used
Controller type	No controller	Total number of control points	0 control points

Warranty — Module Position: 0

Warranty section	Std. warranty only

Unless otherwise noted in the product report, performance is certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard.

Certified units may be found in the AHRI Directory at www.ahridirectory.org

Air-handling performance data is certified in accordance with AHRI standard 430. Air handlers with plenum fans and vertical draw-thru air handlers where the coil is mounted immediately below the fan section are not covered under the scope of AHRI 430.

All weights and dimensions are approximate. Certified prints on request.

Performance Climate Changer

1/2/2014

Air mixing section

Module Position: 1

Section type	Air mixing section	Design sequence	E
Unit size	30	Filter condition	Mid-life
Mixing section type	reduced length - filter	Filter airflow	15500 cfm
Filter frame	2"	Opening 1 back - airflow	15500 cfm
Filter type 1 - run set	Pleated media - MERV 8	Opening 1 front - airflow	15500 cfm
Side access door location	Right	Opening 1 top - airflow	15500 cfm
Back opening type	High velocity parallel damper	Opening 1 back total pressure drop	0.481 in H2O
Back air path	Entering	Opening 1 top total pressure drop	0.481 in H2O
Back air path type	Return	Greatest entry PD	0.481 in H2O
Back inlet type	Ducted	Opening 1 back - area	7.54 sq ft
Front opening type	Full face opening	Opening 1 back - face velocity	2055 ft/min
Front air path	Leaving	Opening 1 back - pressure drop	0.481 in H2O
Top opening type	High velocity parallel damper	Opening 1 front - area	34.18 sq ft
Top air path	Entering	Opening 1 top - area	7.54 sq ft
Top air path type	Outside	Opening 1 top - face velocity	2055 ft/min
Top inlet type	Ducted	Opening 1 top - pressure drop	0.481 in H2O
Bottom opening type	No opening	Filter area	30.44 sq ft
Right side opening type	No opening	Filter face velocity	509 ft/min
Left side opening type	No opening	Filter pressure drop	0.653 in H2O

All weights and dimensions are approximate. Certified prints on request.

Performance Climate Changer

Coil section

Module Position: 2

Coil se [3]-1

Section type	Horizontal coil	Fluid type	Water
Unit size	30	Coil fluid percentage	100.00 %
Section size	Medium	Target valve pressure drop	4.00 psig
Coil application	Cooling coil	Coil type	UW
Changeover coil	No	Rows	4 rows
System type	Chilled water	Fin type	Delta flo E (energy efficient)
Coil supply/cabinet side	Right	Fin material	Aluminum fins
Coil casing	Galvanized	Tube diameter	1/2In. tube diameter (12.7 mm)
Coil height	Unit coil height	Tube matl/wall thickness	.016" (0.406mm) copper tubes
Extended drain and vent	No	Corrosion resistant coating	None
Drain pan	Galvanized	Coil face velocity	518 ft/min
Drain connection location	Right	Air pressure drop	0.477 in H2O
Design sequence	E	J trap dimension	1.979 in
Apply AHRI ranges	No	H trap dimension	3.958 in
Coil performance airflow	15500 cfm	Leaving fluid temperature	54.00 F
Coil elevation	0.00 ft	Fluid pressure drop	9.80 ft H2O
Entering dry bulb	80.00 F	Fluid volume	13.69 gal
Entering wet bulb	67.00 F	Fluid velocity	4.28 ft/s
Leaving dry bulb	57.78 F	Coil face area	29.90 sq ft
Leaving wet bulb	56.49 F	Coil rigging weight	305.6 lb
Sensible capacity	379.57 MBh	Coil installed weight	420.1 lb
Total capacity	513.44 MBh	Coil section pressure drop	0.477 in H2O
Nominal fin spacing	120 Per Foot	Section length	14.000 in
Entering fluid temperature	44.00 F	Section height	81.500 in
Fluid temperature rise	10.00 F	Section width	93.500 in
Standard fluid flow rate	102.32 gpm	Section weight	631.1 lb
Coil fouling factor	0.00000 hr-sq ft-deg F/Btu		

UV systems

Module Position: 3

Section type	UV	Access door location	Door - right side

Performance Climate Changer

1/2/2014

Fan section — **Module Position:** 4

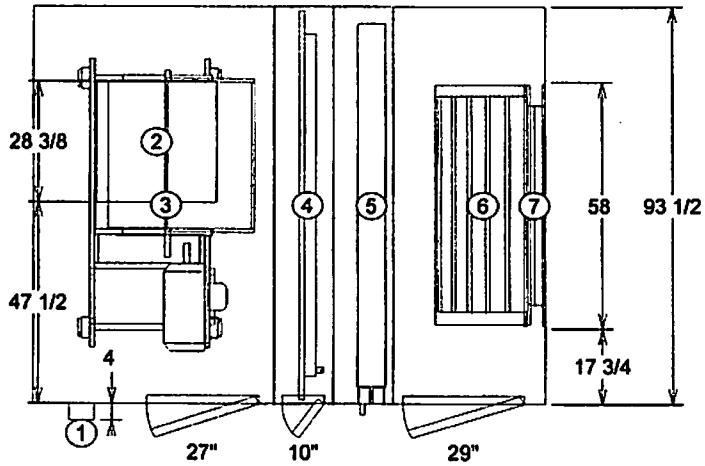
Fan sec [4]-1			
Section type	Fan	Section weight	1485.0 lb
Fan application	Supply fan	Static pressure origin	Program calculated
Unit size	30	Single or front discharge - 63 Hz	96 dB
Inlet location	Back Inlet	Single or front discharge - 125 Hz	93 dB
Fan orientation	Top-back discharge	Single or front discharge - 250 Hz	87 dB
Fan discharge	Top back	Single or front discharge - 500 Hz	89 dB
Side access door location	Right	Single or front discharge - 1K Hz	86 dB
Drive location	Right side drive	Single or front discharge - 2K Hz	83 dB
Design sequence	H	Single or front discharge - 4K Hz	79 dB
Motor horsepower per fan	20 hp	Single or front discharge - 8K Hz	75 dB
NEMA nominal motor efficiency	93.00 %	Inlet and casing - 63 Hz	96 dB
Motor class	NEMA premium compliant ODP	Inlet and casing - 125 Hz	87 dB
Motor voltage	460/3	Inlet and casing - 250 Hz	80 dB
Cycle	60 cycles/sec	Inlet and casing - 500 Hz	82 dB
Drive service factor	1.5 fixed drive	Inlet and casing - 1K Hz	76 dB
Motor RPM	1800	Inlet and casing - 2K Hz	74 dB
Fan airflow	15500 cfm	Inlet and casing - 4K Hz	69 dB
Overall ESP	2.000 in H2O	Inlet and casing - 8K Hz	66 dB
Unit entering ESP	1.000 in H2O	Ducted Inlet - 63 Hz	90 dB
Unit discharge ESP	1.000 in H2O	Ducted Inlet - 125 Hz	75 dB
Elevation	0.00 ft	Ducted Inlet - 250 Hz	70 dB
Minimum temperature	40.00 F	Ducted Inlet - 500 Hz	72 dB
Design temperature	70.00 F	Ducted Inlet - 1K Hz	68 dB
Fan size and type	22in. diameter FC, H press	Ducted Inlet - 2K Hz	65 dB
Total brake horsepower	18.161 hp	Ducted Inlet - 4K Hz	60 dB
Total brake horsepower at min temp	19.252 hp	Ducted Inlet - 8K Hz	55 dB
Total static pressure	3.611 in H2O	Casing - 63 Hz	95 dB
Speed	915 rpm	Casing - 125 Hz	83 dB
Outlet area	5.54 sq ft	Casing - 250 Hz	77 dB
Fan outlet velocity	2797 ft/min	Casing - 500 Hz	90 dB
Fan module pressure drop	2.000 in H2O	Casing - 1K Hz	84 dB
Fan discharge loss pressure drop	0.000 in H2O	Casing - 2K Hz	63 dB
Section height	61.500 in	Casing - 4K Hz	44 dB
Section length	56.500 in	Casing - 8K Hz	50 dB
Section width	93.500 in		

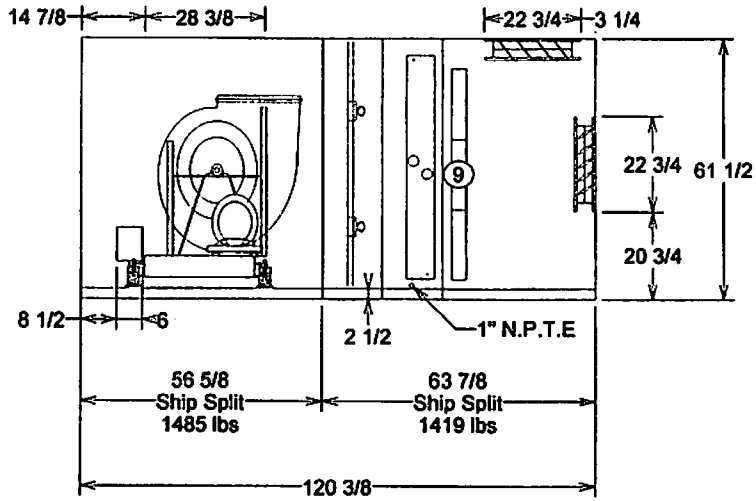
Unless otherwise noted in the product report, performance is certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard.

Certified units may be found in the AHRI Directory at www.ahridirectory.org

Air-handling performance data is certified in accordance with AHRI standard 430. Air handlers with plenum fans and vertical draw-thru air handlers where the coil is mounted immediately below the fan section are not covered under the scope of AHRI 430.

All weights and dimensions are approximate. Certified prints on request.





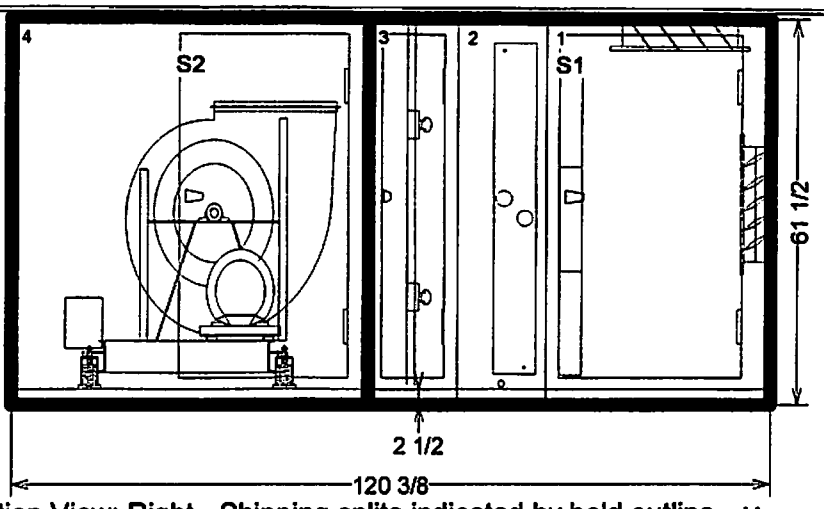
1 External junction box RH
2 TPBK discharge opening 28.380 x 28.380
3 Housed fan - 22in. diameter FC, H press Supply fan 20 hp 460/3
4 2 Row UV light rack
5 Cooling coil - 4 rows Coil type UW
6 Damper top-parallel blade 22.750 x 58.000
7 Damper back-parallel blade 22.750 x 58.000
8 1" N.P.T.E
9 Flat filters -

Doors
27 width x 55 height
10 width x 55 height
29 width x 55 height

For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length shown.

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 30	Job Name: City of Rocky Mount AHU Replacement	Unit Casing: 2in Double Wall	TRANE® Performance Climate Changer™ Air Handlers
Product group: Indoor unit	Actual airflow: 15500 cfm	Proposal Number:	
Integral base frame: 2.5in. integral base frame		Tags: AHU-A1/2	
Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 2789.6 lb/ 2904.1 lb	

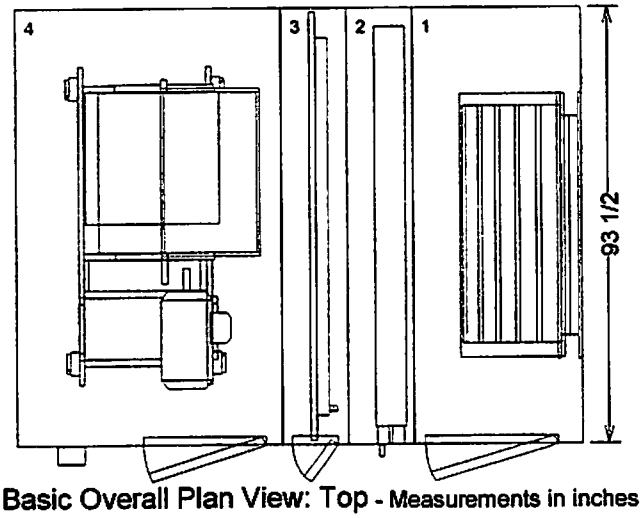


Overall Elevation View: Right - Shipping splits indicated by bold outline. - Measurements in inches

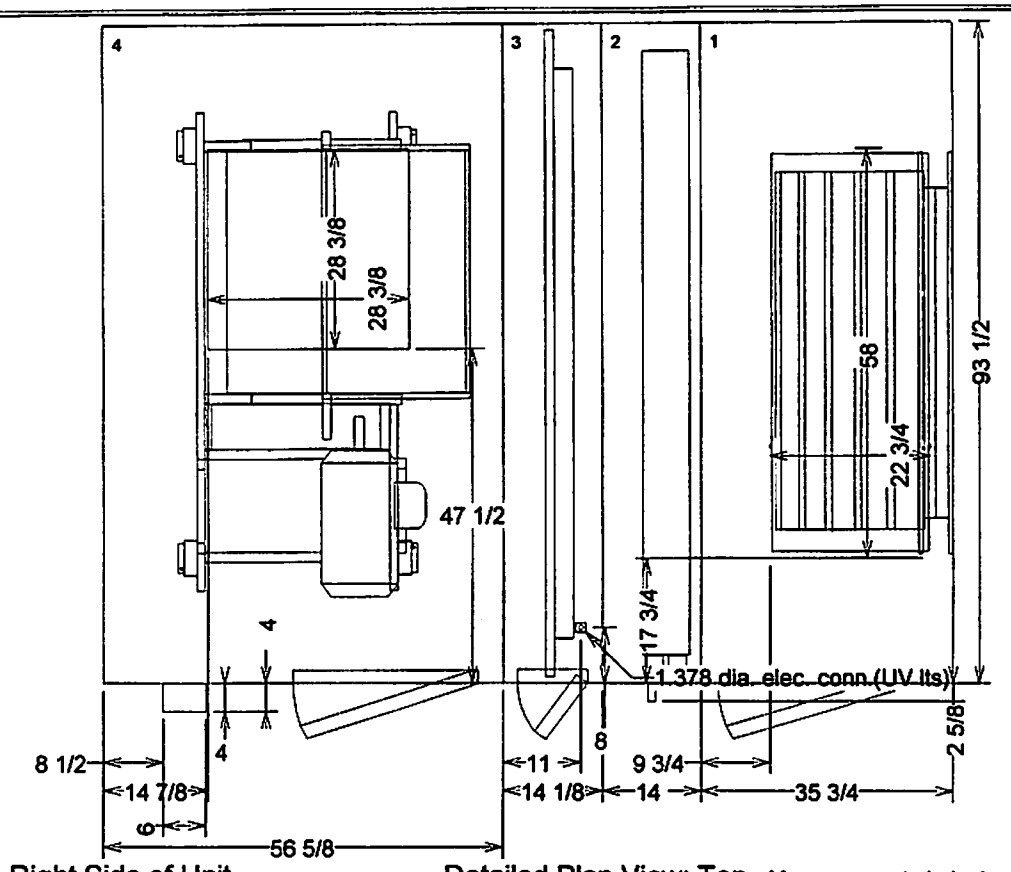
For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length sh

Pos #	Module	Length	Weight
1	Air mixing section	35 3/4	570.00
2	Coil section	14	631.10
3	UV systems	14 1/8	218.00
4	Fan section	56 5/8	1485.00

Installed Unit Weight 2904.10 lbs

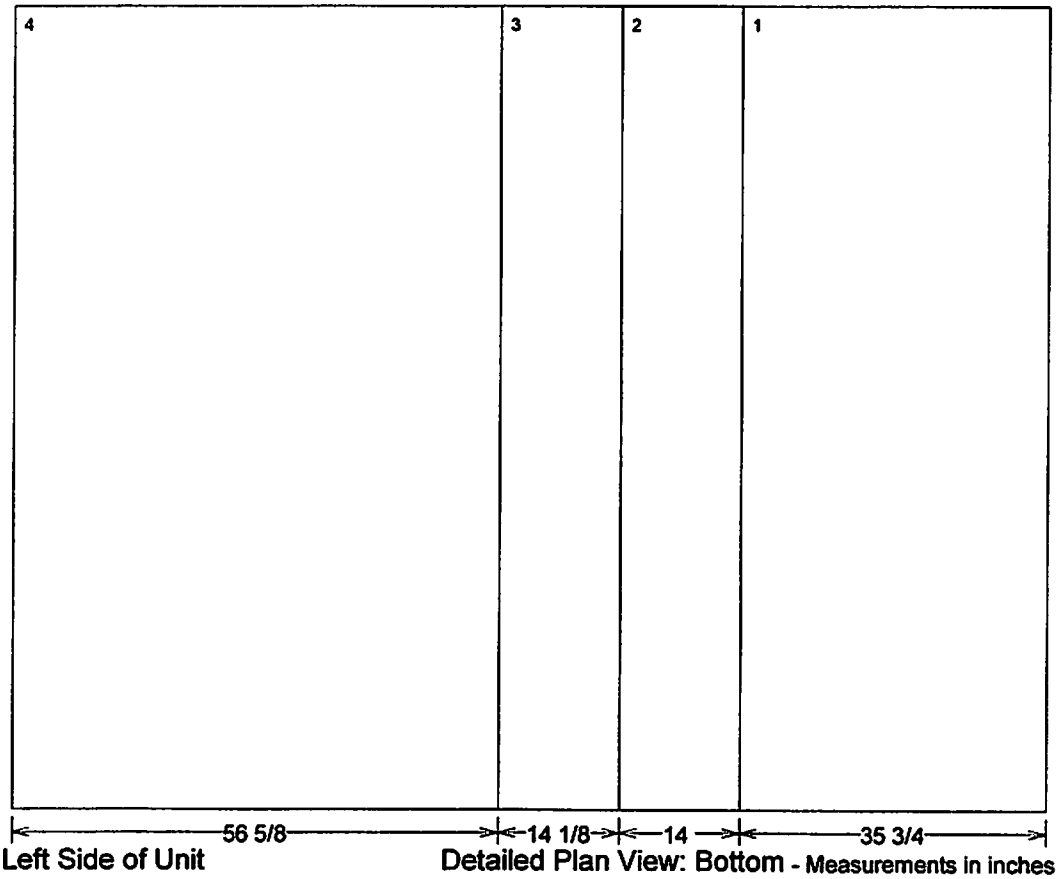


Basic Overall Plan View: Top - Measurements in inches



Right Side of Unit

Detailed Plan View: Top - Measurements in inches

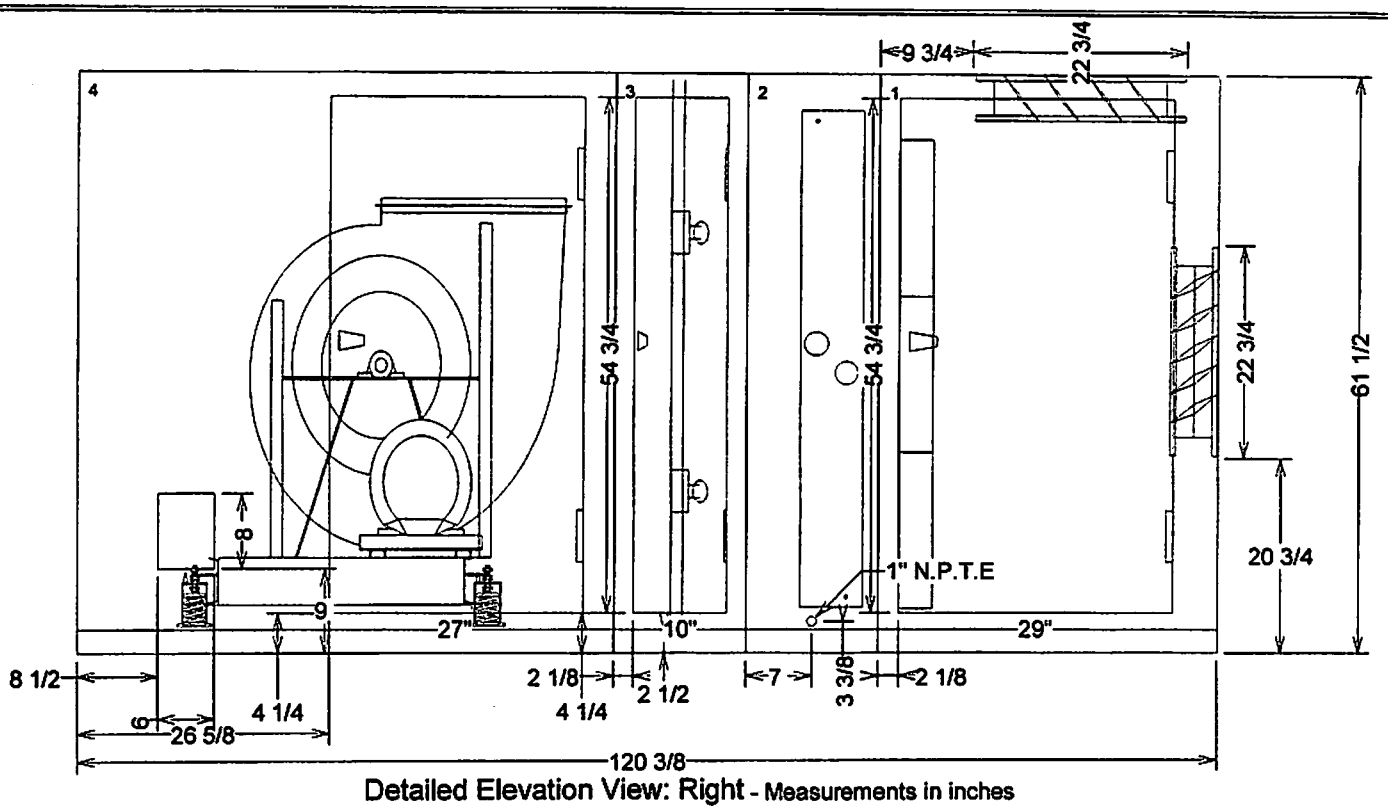


Left Side of Unit

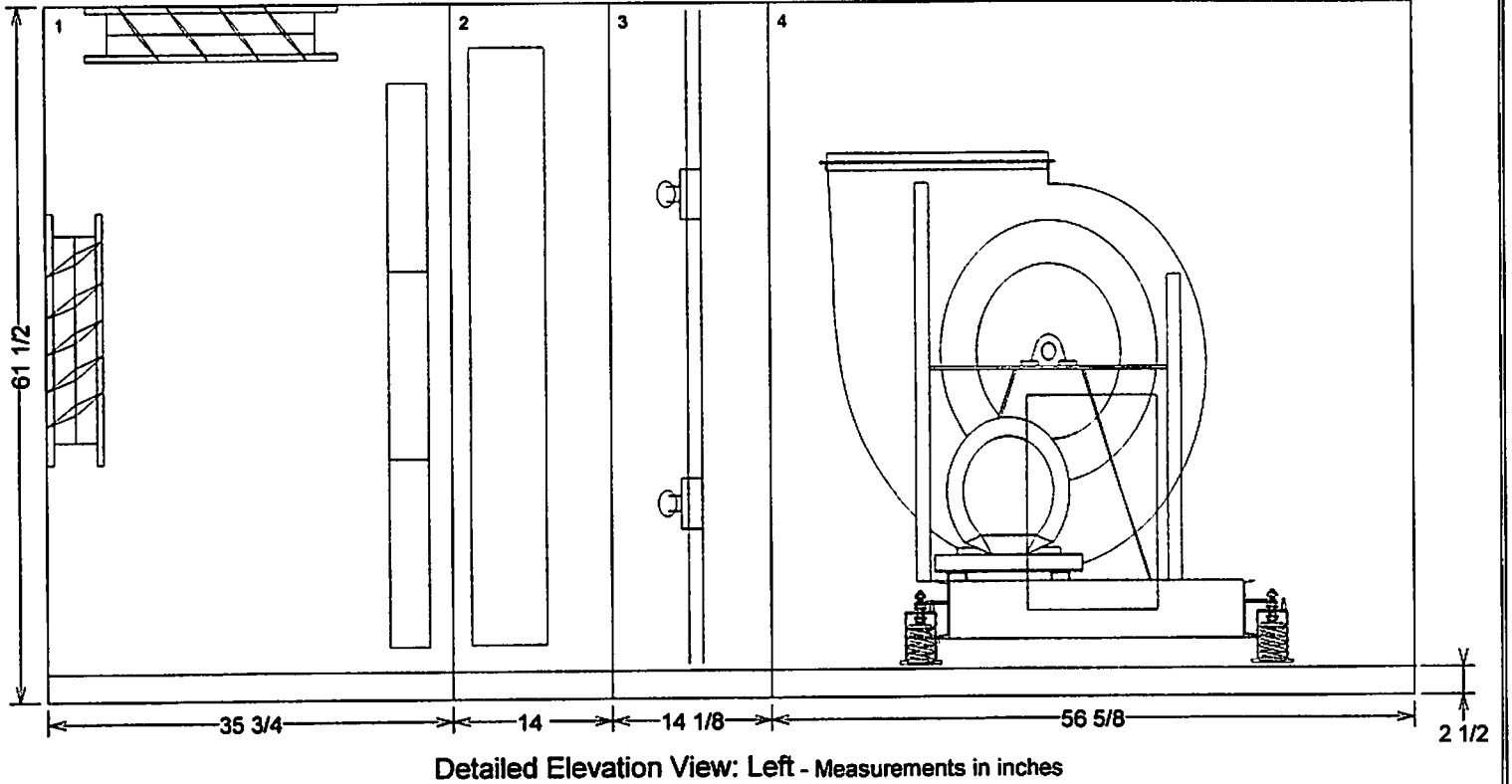
Detailed Plan View: Bottom - Measurements in inches

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 30	Job Name: City of Rocky Mount AHU Replacement	Unit Casing: 2In Double Wall	TRANE ©
Product group: Indoor unit	Actual airflow: 15500 cfm	Proposal Number:	Performance Climate Changer Air Handlers
Integral base frame: 2.5in. integral base frame		Tags: AHU-A1/2	
Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 2789.6 lb/ 2904.1 lb	



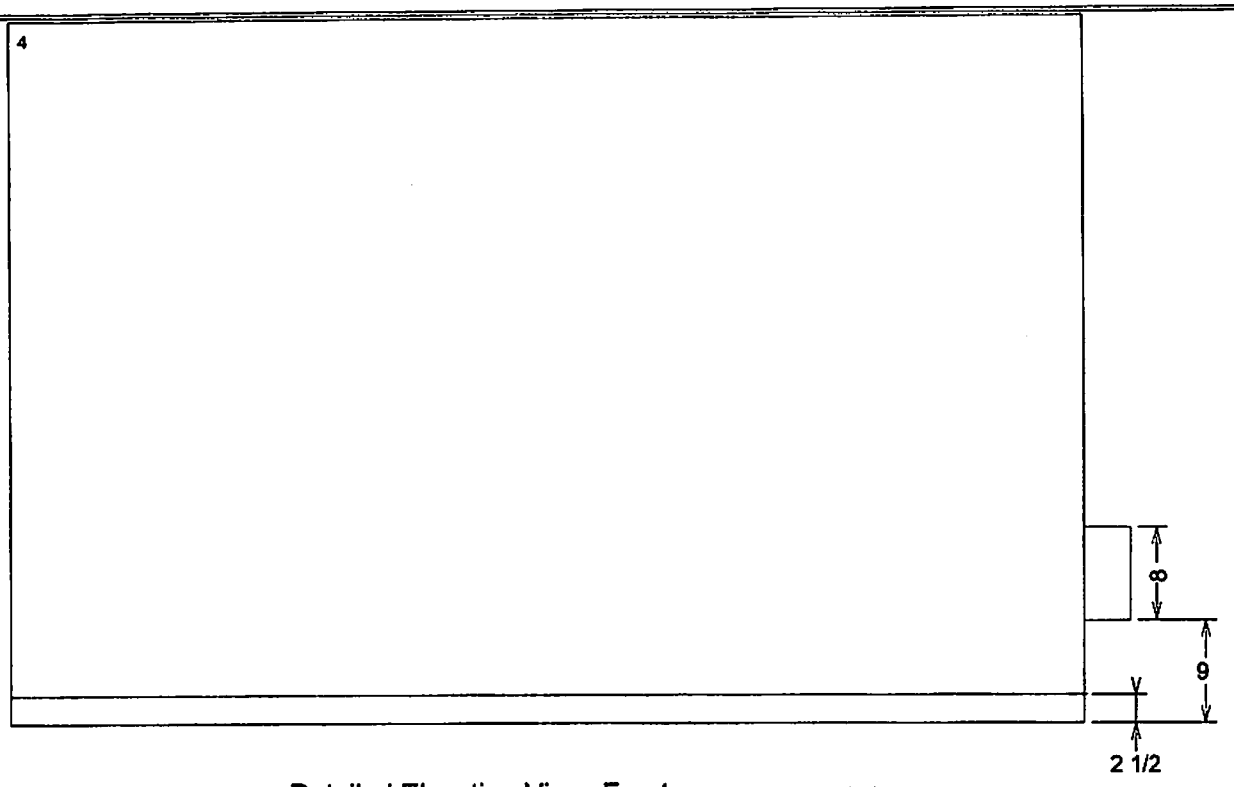
Detailed Elevation View: Right - Measurements in inches



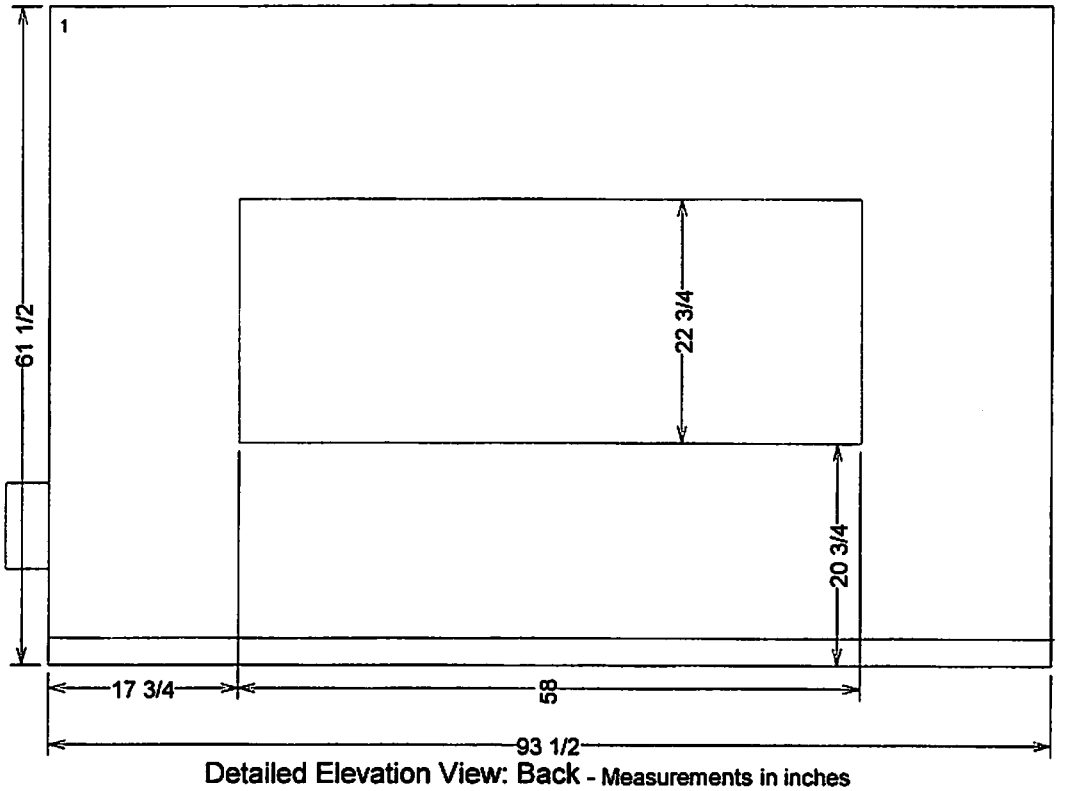
Detailed Elevation View: Left - Measurements in inches

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 30	Job Name: City of Rocky Mount AHU Replacement	Unit Casing: 2in Double Wall	TRANE®
Product group: Indoor unit		Proposal Number:	
Integral base frame: 2.5in. integral base frame	Actual airflow: 15500 cfm	Tags: AHU-A1/2	Performance Climate Changer™ Air Handlers
Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 2789.6 lb/ 2904.1 lb	



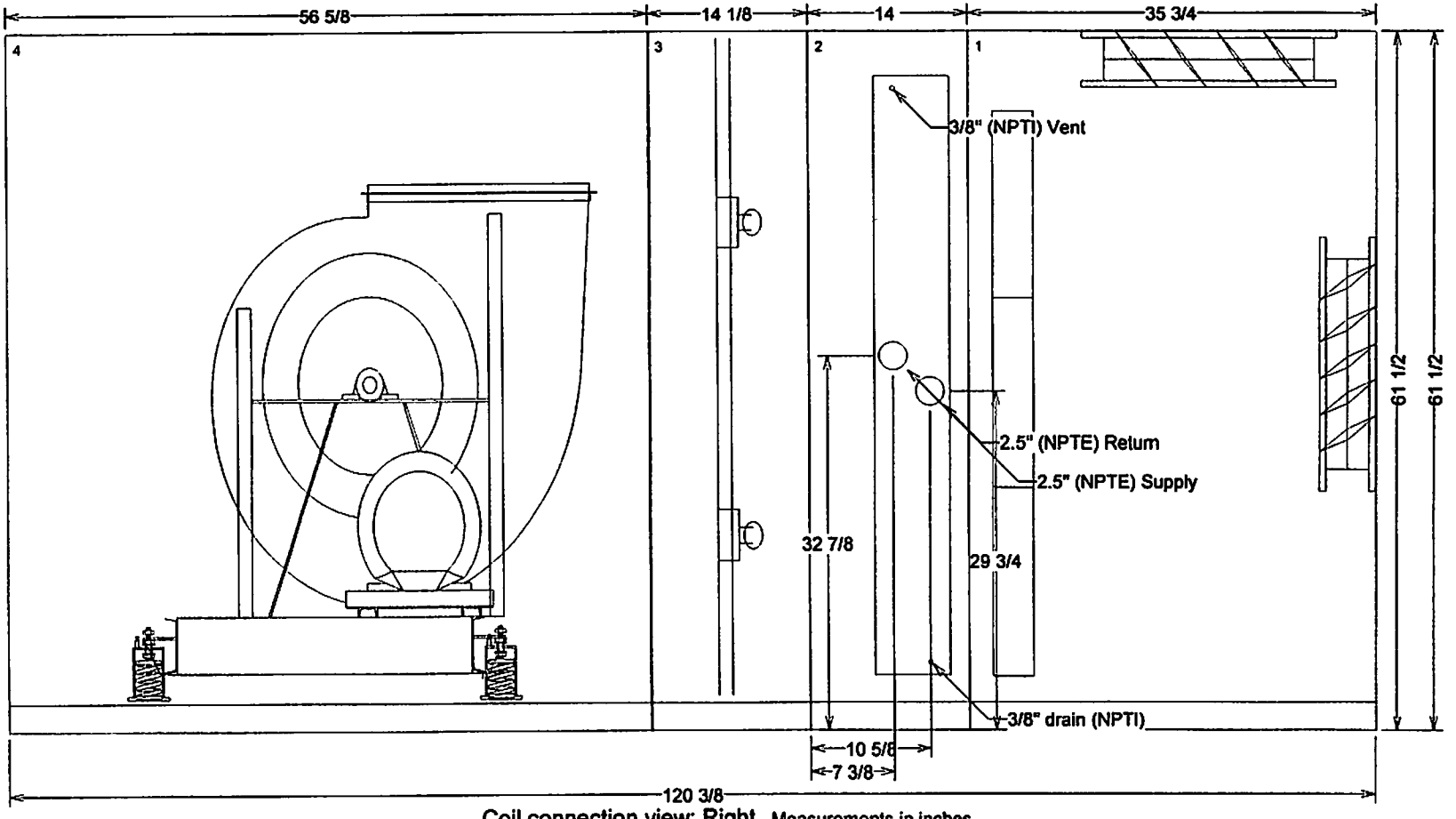
Detailed Elevation View: Front - Measurements in inches



Detailed Elevation View: Back - Measurements in inches

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 30	Job Name: City of Rocky Mount AHU Replacement	Unit Casing: 2in Double Wall	TRANE® Performance Climate Changer™ Air Handlers
Product group: Indoor unit	Actual airflow: 15500 cfm	Proposal Number:	
Integral base frame: 2.5in. integral base frame		Tags: AHU-A1/2	
Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 2789.6 lb/ 2904.1 lb	

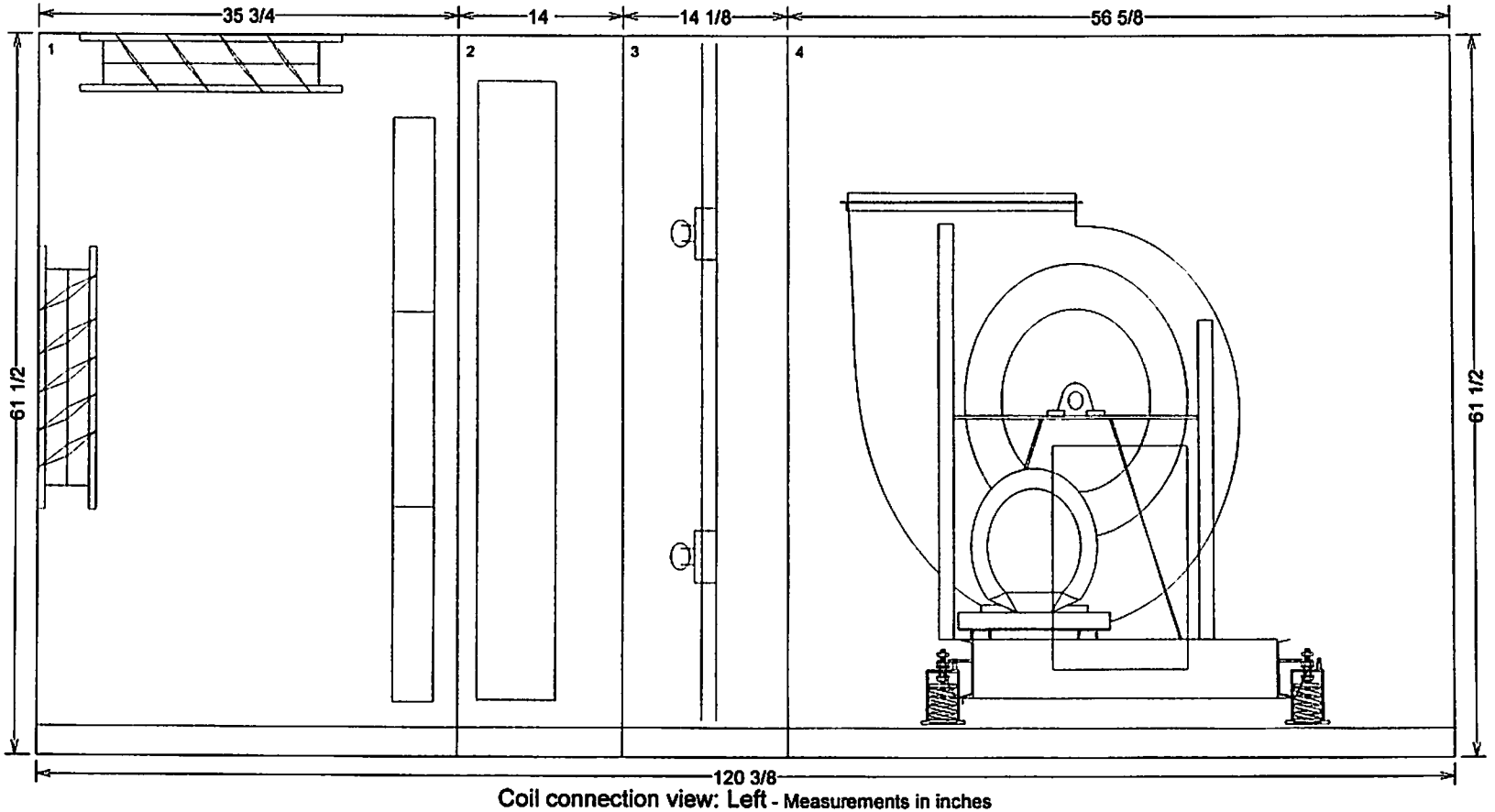


Coil connection view: Right - Measurements in inches

NPTI : National Pipe Thread Internal Connection
NPTE : National Pipe Thread External Connection

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 30	Job Name: City of Rocky Mount AHU Replacement	Unit Casing: 2in Double Wall	TRANE® Performance Climate Changer™ Air Handlers
Product group: Indoor unit	Actual airflow: 15500 cfm	Proposal Number:	
Integral base frame: 2.5in. integral base frame		Tags: AHU-A1/2	
Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 2789.6 lb/ 2904.1 lb	



Coil connection view: Left - Measurements in inches

NPTI : National Pipe Thread Internal Connection
NPTE : National Pipe Thread External Connection

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 30	Job Name: City of Rocky Mount AHU Replacement	Unit Casing: 2in Double Wall	TRANE® Performance Climate Changer™ Air Handlers
Product group: Indoor unit	Actual airflow: 15500 cfm	Proposal Number:	
Integral base frame: 2.5in. integral base frame		Tags: AHU-A1/2	
Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 2789.6 lb/ 2904.1 lb	

HEATRIX
ELECTRIC DUCT HEATERS

DELL CORP.
245 SOUTH WEST 33rd STREET - FORT LAUDERDALE - FLORIDA 333
(954) 523-6478 FAX (954) 523-6
ALL U.S.A. TOLL FREE 1-800-537-4820
Website: www.dellheatrix.com

SUBMITTAL DATA
STANDARD FEATURES

UNDERWRITERS LABORATORIES LISTED FILE #E37196 AND #E56600 - SUITABLE FOR ZERO CLEARANCE - SLIP IN HEATER CONSTRUCTION - MIN 20 MSG GALAVANIZED STEEL - HINGE COVER AND FALSE BOTTOM ON M-SERIES - ALL WELDED CONSTRUCTION.

AUTOMATIC RESETS CONTROL CIRCUIT – MANUAL RESETS POWERLEGS – TERMINAL BLOCK FOR POWER AND CONTROL CIRCUIT – HIGH GRADE NICHROME OPEN ELEMENT COIL – COMPLETELY PRE-WIRED.

Quote # 35653 - 1

OPTIONAL FEATURES

- ☐ FAN INTERLOCK RELAY
- ☑ AIR FLOW SWITCH NON ADJ
- ☑ POSITIVE PRESSURE SYSTEM
- ☐ NEGATIVE PRESSURE SYSTEM
- ☐ AIR FLOW SWITCH-ADJUSTABLE
- ☑ CONTROL TRANSFORMER CLASS 2-24V
- ☐ CONTROL TRANSFORMER CLASS 1 _____ VOLTS
- ☐ PRIMARY FUSING OF TRANSFORMER
- ☐ SECONDARY FUSING OF TRANSFORMER
- ☐ DEENERGIZING CONTACTOR
- ☑ DISCONNECTING CONTACTOR
- ☑ MAGNETIC CONTACTOR
- ☐ MERCURY CONTACTOR
- ☐ BINARY CONTROL
- ☐ TIME DELAY RELAY BETWEEN STEPS
- ☑ CIRCUIT FUSING PER NEC
- ☐ CIRCUIT FUSING
- ☐ FINNED TUBULAR ELEMENTS
- ☐ FINNED TUBULAR ELEMENTS - STAINLESS
- ☐ FUSED DOOR INTERLOCKING DISCONNECT
- ☐ UNFUSED DOOR INTERLOCKING DISCONNECT
- ☐ ELECTRICAL STEP CONTROLLER
- ☐ PNEUMATICE STEP CONTROLLER
- ☐ ROOM THERMOSTAT
- ☐ DUCT THERMOSTAT
- ☑ 100% SCR CONTROLLER
- ☑ VERNIER SCR CONTROLLER
- ☐ VERNIER BOARD
- ☐ PE CLOSE ON PRESSURE RISE PER STEP
- ☐ INSULATED CONTROL PANEL
- ☐ PILOT LIGHT POWER / CONTROL ON
- ☐ PILOT LIGHT PER STEP
- ☐ PILOT LIGHT NO AIR FLOW
- ☐ TOGGLE SWITCH - CONTROL CIRCUIT ONLY
- ☐ SLIP IN CONSTRUCTION - (FIG #1)
- ☐ BOTTOM MOUNT - (FIG #3)
- ☐ TOP MOUNT - (FIG #3)
- ☐ FLANGE MOUNT - (FIG #2)
- ☐ HEATER WRAP CENTERED ON CONTROL BOX
- ☐ SLIP IN HEATER W/FLANGED PLENUM
- ☐ SLIP IN HEATER W/PLENUM FOR ROUND DUCT
- ☐ DUST TIGHT TERMINAL COVER
- ☐ SCREW ON COVER (NOT UL ON M SERIES)
- ☐ OUTDOOR CONTROL PANEL NEMA 4
- ☐ _____" RECESSED TERMINAL CONTROL PANEL
- ☐ REMOTE CONTROL PANEL - (FIG#4)
- ☐ 80/20 WIRE
- ☐ 35 WATTS PER SQUARE IN ELEMENT WIRE
- ☐ 25 WATTS PER SQUARE IN ELEMENT WIRE
- ☑ STAINLESS STEEL TERMINALS
- ☐ ALL STAINLESS STEEL CONSTRUCTION
- ☐ STAINLESS STEEL CONTROL PANEL
- ☐ PROTECTIVE SCREENS ON AIR ENTERNING SIDE
- ☐ PROTECTIVE SCREENS ON AIR EXITING SIDE
- ☐ HEATRIX CRESCENT ROUND - FIG 7
- ☑ HINGED COVER ON ☐ LEFT SIDE ☑ RIGHT SIDE (STD)
  ☐ TOP SIDE ☐ BOTTOM SIDE (LOOKING INTO CONTROL)
- ☑ ETL LISTED - MODEL: HXOB

ENGINEER BRADY TRANE
DATE 12/26/2013
PROJECT CLIMATE CHANGERS

DELL CORP.
245 Southwest 33rd Street
Fort Lauderdale, FL 33315
Phone (954) 523-6478
Fax (954) 523-6489

HXOB Vertical Single Discharge Submittal Sheet

HEATRIX

FPM 77 = 775
FPM 100 = 1150

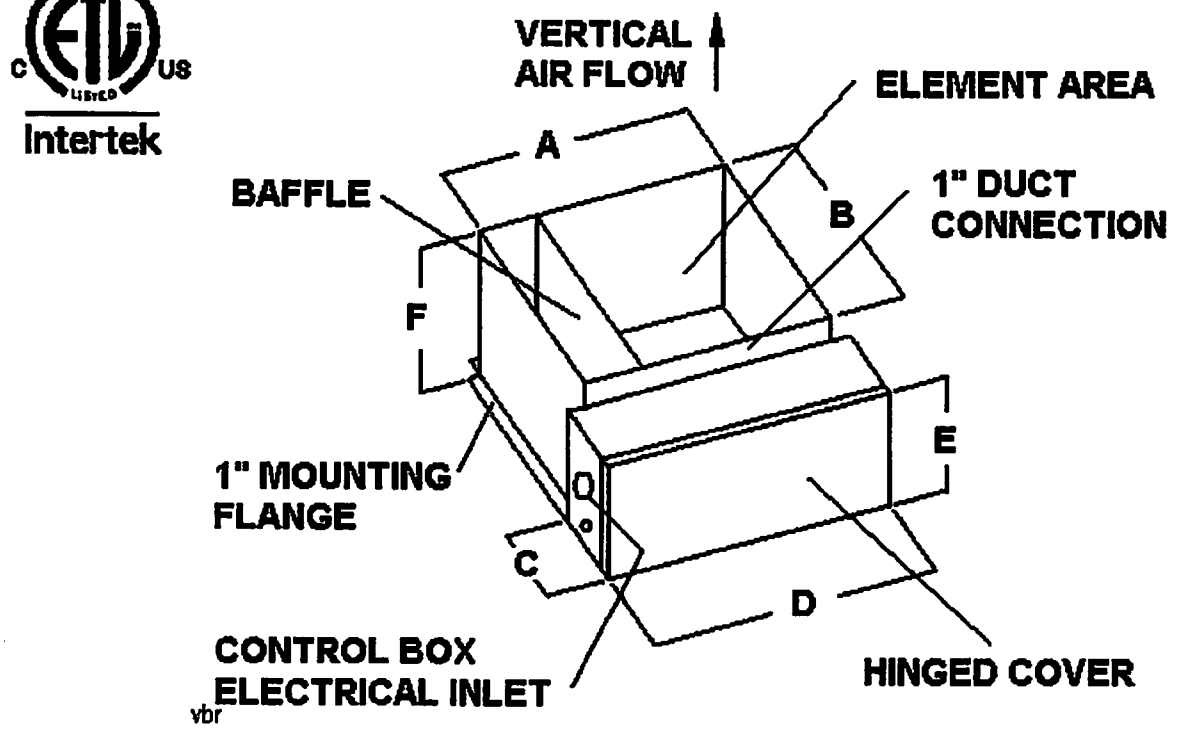
26-Dec-13
Prepared by: Lucius Lobdell
Ref number: 35653
Ref date: 12/19/2013

Client: 2716 BRADY TRANE

Job Name: CLIMATE CHANGERS

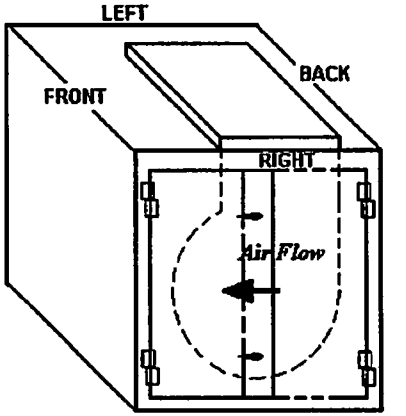
QTY	HEATER MODEL NUMBER	KW	SUPPLY VOLTAGE		CONT V	STEPS	AMPS	HEATER DIMENSIONS							REMOTE PANEL			DISCHARGE ARRANGEMENT CONTROL BOX	TAG
			V	P				A	B	C	D	E	F	FIG #	CC	DD	EE		
1	XOB-30PCLCH(22FC)-50-460-3-V/SC	50	460	3	24	SCR	62.76	28.63	28.63	14.00	30.63	11.00	12.00	3				VERTICAL BACK CONTROL BOX RIGHT	AHU-A
FLA = 62.76							MCA = 78.44							MOCP = 95.					

Intertek

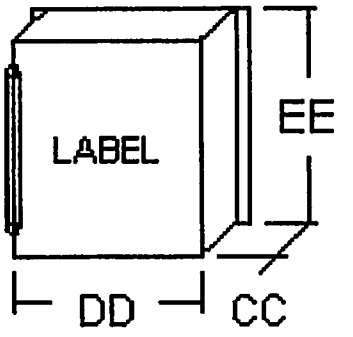


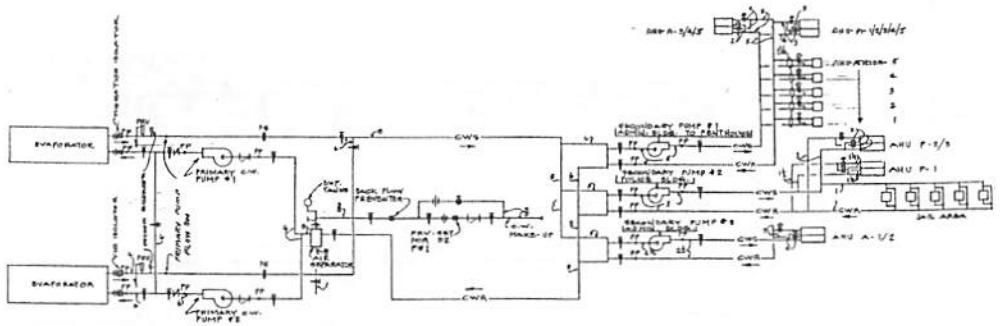
* CONTROL BOX VIEWED WITH AIR IN FACE.
ACCESS CAN BE RIGHT/LEFT - STANDARD
BACK/FRONT - OPTIONAL

VERTICAL DISCHARGE ARRANGEMENT



VERTICAL BACK





CHILLED WATER PIPING DIAGRAM
NO SCALE

CHILLER - TRANE - CVEA 018 9D DI DIS - 3600 RPM, DIRECT DRIVE, 361 TONS @ 85°F COND. EWT 95.4°F LWT 2 PASS, .001 FOULING FACTOR, 469 GPM @ 19.0 FT. PD EVAPORATOR 900 GPM 49.92°F EWT 42°F LWT 2 PASS 19.6 FT PD .0005 FOULING FACTOR 480V, 3Ø .963 KW/TON

CARRIER OR YORK CHILLERS MAY BE BID AS AN ALTERNATE BUT THE KW/TON, GPM & PRESSURE DROPS SHALL NOT EXCEED THE VALUES STATED ABOVE

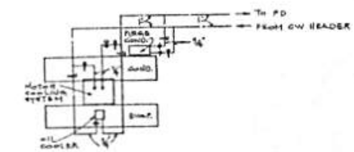
(2) PRIMARY LOOP PUMP: B&G VSC - 6×6×7¾ 900 GPM @ 47' HD 10 HP 3Ø 480V. 1750 RPM

CHILLED WATER PUMP #1 (SECONDARY LOOP) B&G VSC - 5×5×7¾ 205 GPM @ 40' HD 7½ HP 3Ø 480V 1750 RPM

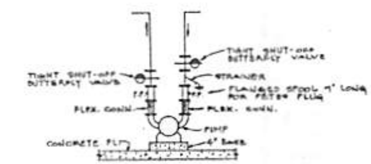
CHILLED WATER PUMP #2 (SECONDARY LOOP) B&G VSC - 4×4×7¾ - 100 GPM @ 45' HD 5 HP 3Ø 480V 1750 RPM

CHILLED WATER PUMP #3 (SECONDARY LOOP) SERIES 80 NO. 2×2×7 - 45 GPM @ 50' HD 1½ HP 3Ø 480V. 1750 RPM

(1) CONDENSER WATER PUMP - B&G VSC 6×6×7¾ 907 GPM @ 80' HD - 20 HP 3Ø 480V 1750 RPM



CHILLER AUXILIARY WATER PIPING DIAGRAM
NO SCALE



TYPICAL PUMP PIPING DIAGRAM
NO SCALE

DATA INDICATOR STATIONS - ALL TEMP. IN O°F.

1. OUTDOOR AIR TEMPERATURE
2. CHILLER NO. 1 CONDENSER WATER TEMP. IN
3. " " " " " OUT
4. " " CHILLED WATER TEMP. IN
5. " " " " " OUT
6. CHILLER NO. 2 CONDENSER WATER TEMP. IN
7. " " " " " OUT
8. " " CHILLED WATER TEMP. IN
9. " " " " " OUT
10. CHILLED WATER RET. TO PRIMARY LOOP - PUMP 1 AD. PENTHOUSE WATER TEMP.
11. " " " " " " PUMP 2 POLICE BLDG. " "
12. " " " " " " PUMP 3 FIRST FL. AD. BLDG. " "
13. AHU - F-1 RET. AIR TEMP.
14. " " MIXED AIR TEMP.
15. " " SUPPLY AIR TEMP.
16. AHU - F-2/3 RET. AIR TEMP.
17. " " MIXED AIR TEMP.
18. " " SUPPLY AIR TEMP.
19. AHU - A-1/2 RET. AIR TEMP.
20. " " MIXED AIR TEMP.
21. " " SUPPLY AIR TEMP.
22. AHU - A-3/4/5 RET. AIR TEMP.
23. " " MIXED AIR TEMP.
24. " " SUPPLY AIR TEMP.
25. AHU - A-1/2/3/4/5 RET. AIR TEMP.
26. " " MIXED AIR TEMP.
27. " " SUPPLY AIR TEMP.
28. ATRIUM UNIT 1ST FL. RET. AIR TEMP.
29. " " " SUPPLY AIR TEMP.
30. ATRIUM UNIT 2ND FL. RET. AIR TEMP.
31. " " " SUPPLY AIR TEMP.
32. ATRIUM UNIT 3RD FL. RET. AIR TEMP.
33. " " " SUPPLY AIR TEMP.
34. ATRIUM UNIT 4TH FL. RET. AIR TEMP.
35. " " " SUPPLY AIR TEMP.
36. ATRIUM UNIT 5TH FL. RET. AIR TEMP.
37. " " " SUPPLY AIR TEMP.
38. SUPPLY AIR TO JAIL AREA TEMP. FROM MAKE-UP DUCT AFTER HEAT COIL
39. COMPUTER ROOM 4TH FL. AD. BLDG. TEMP.
40.

INDICATING LIGHTS - LED
LABELS - ENGRAVED LAMINATED PLASTIC FOR PANEL & LTS.

EQUIPMENT OPERATION STATUS PANEL
LIGHT "ON" INDICATES EQUIPMENT OPERATING

CHILLER #1	CHILLER #2	AHU- A-1/2	AHU- F-1	ATRIUM 5TH FL.	TEMP. CONT. AIR COMP.
CONDENSER PUMP #1	CONDENSER PUMP #2	AHU- A-3/4/5	AHU- F-2/3	ATRIUM 4TH FL.	TEMP. CONT. MAIN AIR PRESSURE
PRIMARY PUMP #1	PRIMARY PUMP #2	AHU- A-1/2/3/4/5	JAIL EX. FAN	ATRIUM 3RD FL.	SPARE
COOLING TOWER #1	COOLING TOWER #2	TOILET EX. FAN ADMIN. PENTHOUSE	JAIL MAKE-UP AIR FAN	ATRIUM 2ND FL.	SPACE
CHILLED WATER PUMP #1 AD. BLDG. PENTHOUSE	CHILLED WATER PUMP #2 POLICE BLDG.	MAKE-UP FAN AD PENTHOUSE	POLICE BLDG. 2ND FL. TOILET EX. FAN	ATRIUM 1ST FL.	SPACE
CHILLED WATER PUMP #3 AD. BLDG. 1ST FL.	COUNCIL RM. UNIT	COMMITTEE RM. UNIT	POLICE BLDG. 3RD FL. TOILET EX. FAN - MEN	SPARE	SPACE
SPACE	SPACE	SPACE	POLICE BLDG. 3RD FL. TOILET EX. FAN WOMEN	SPACE	SPACE
RAF A-1/2	RAF A-3/4/5	RAF A-1/2/3/4/5	RAF F-2/3	SPACE	SPACE

CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AT JOB.

REVISIONS

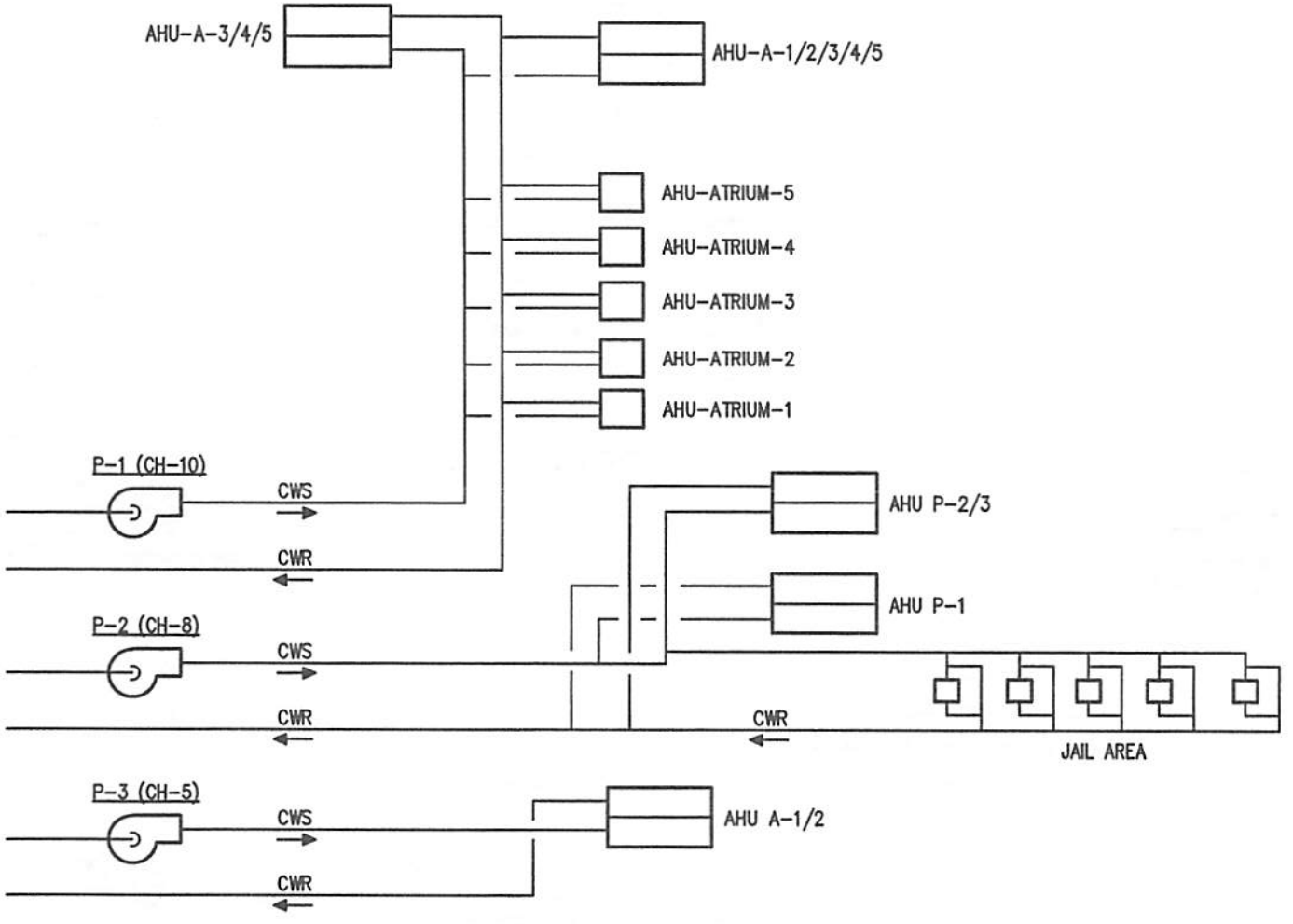
Edwards and Associates
3123 Sunset Avenue
Rocky Mount, North Carolina

CITY HALL COMPLEX
FOR THE
CITY OF ROCKY MOUNT, NORTH CAROLINA

SMITH-WOLLAEGER and ASSOCIATES
CONSULTING ENGINEERS
DURHAM, N.C.
JOB NO. 1176

NORTH CAROLINA REGISTERED ENGINEER 1501 WALTER G. SMITH

DRAWN BY WS/CHS
DATE JULY 1980
SHEET 96 OF 110
PROJECT 114
SHEET H-11



CHILLED WATER DIAGRAM

NO SCALE

PREPARED FOR:

THE CITY OF ROCKY MOUNT
ROCKY MOUNT, NORTH CAROLINA

PUMP PIPING SCHEMATIC
THE CITY OF ROCKY MOUNT
ROCKY MOUNT, NC

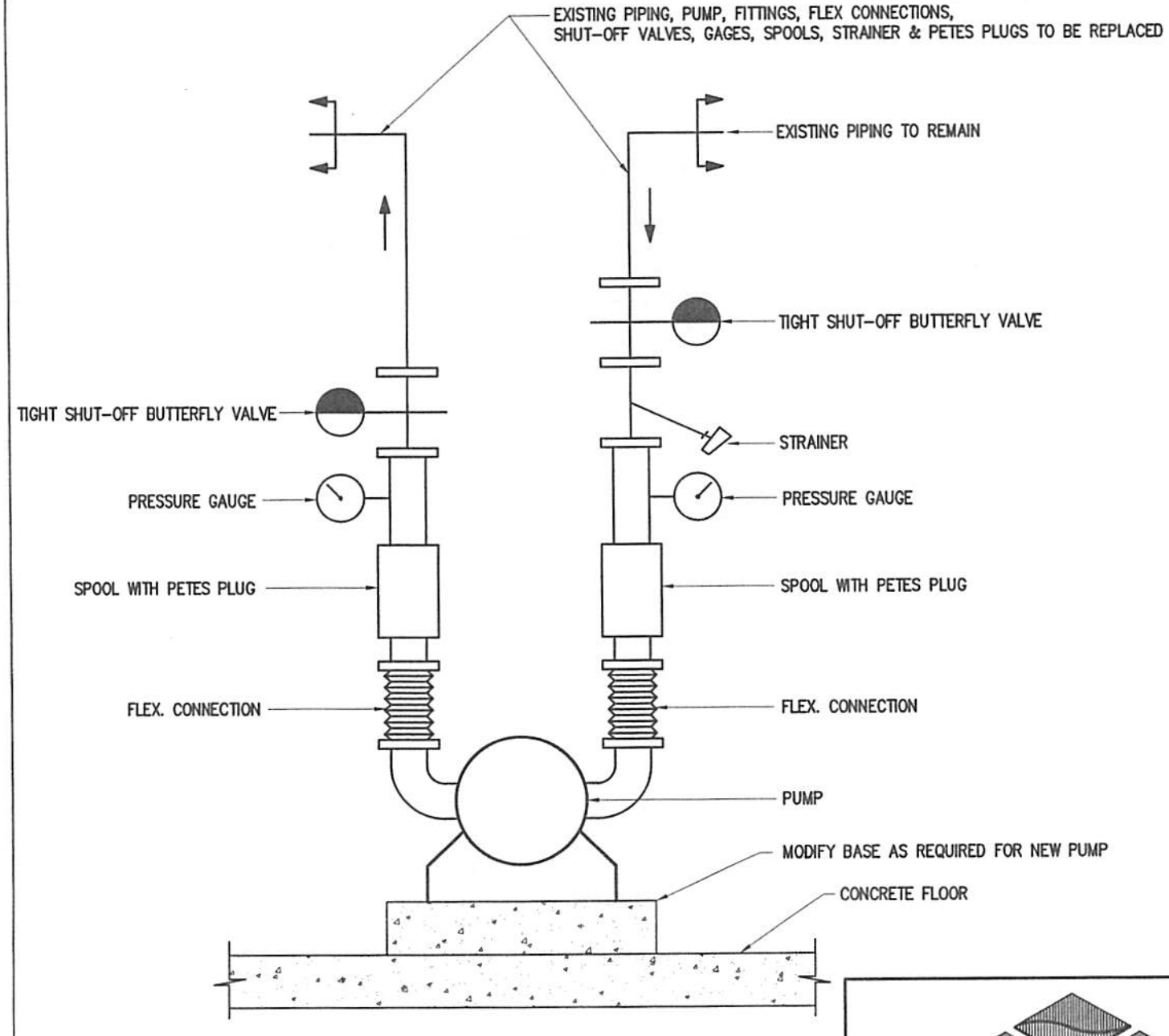
NORTH CAROLINA PROFESSIONAL SEAL 12657 ENGINEER GORDON VESTAL III 1/3/14

V.G. ENGINEERING GROUP, P.C.
PHONE: (252) 813-0954 P.O. BOX 4718 ROCKY MOUNT, NC 27803

DATE: 01-02-14

DRAWN BY: JLT

CHECKED BY: GV/JLT



PUMP PIPING DIAGRAM

NO SCALE

PREPARED FOR:

THE CITY OF ROCKY MOUNT

ROCKY MOUNT, NORTH CAROLINA

PUMP PIPING DIAGRAM

THE CITY OF ROCKY MOUNT

ROCKY MOUNT, NC

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 12657 GORDON VESTAL III 1/3/14

V.G. ENGINEERING GROUP, P.C.
PHONE: (252) 619-0954 P.O. BOX 4716 ROCKY MOUNT, NC 27803

DATE: 01-02-14

DRAWN BY: JLT

CHECKED BY: GV/JLT

PROJECT #2

ROCKY MOUNT POLICE DEPARTMENT

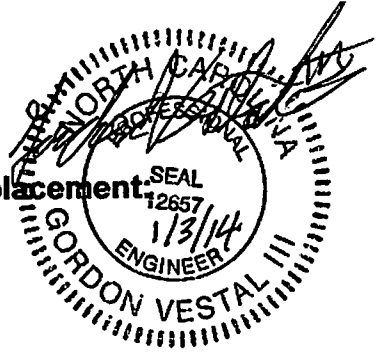
AIR HANDLER AHU P-1 AND PUMP CH-8 (P-2) REPLACEMENT REQUIREMENTS

ROCKY MOUNT POLICE DEPARTMENT

AIR HANDLER AHU P-1 AND PUMP CH-8 (P-2) REPLACEMENT

Table of Contents

First floor mechanical room AHU P-1, and pump CH-8 (P-2) replacement:
Police Dept
City of Rocky Mount



Contractor Qualifications:

The Contractor shall provide with his bid, documentation of his experience with projects of a similar scope and magnitude of this project. The Contractor shall also provide contact names of owners of similar projects that he has completed. The Contractor shall maintain an office providing service and sales within 75 miles of the City of Rocky Mount. The Contractor shall warrant his work for a period of one year from the date of completion and acceptance by the owner. Equipment and installation shall have minimum 1 year warranty for parts and labor. Equipment shall have five years parts and material warranty

Scope of Work: The scope of work shall include the work indicated on the drawings and as described herein and as required for a complete and operational system. The scope of work shall include but not be limited to:

Demolition:

- Remove and dispose of the existing air handling unit AHU P-1.
- Remove and dispose of existing chilled water pump CH-8 (P-2) and associated piping.
- Relocate existing chilled water piping and ductwork as required for removal of existing equipment and installation of new equipment.
- Disposition of all removed or demolished equipment shall be coordinated with the City of Rocky Mount. City shall have the right to retain all or part of materials for future use.
- All material and equipment to be disposed of shall be disposed of in accordance with all Local, State and National codes and environmental regulations.

New Work/Installation:

Work to be performed shall include but not be limited to work shown on the plans and as described herein. Contractor shall include in his price all necessary work and materials to provide a complete and operating system. New air handling unit, return air fan and pump capacities and characteristics shall match that of existing. Refer to included data sheets for new equipment specifications. Air Handling Unit shall be Trane or Owner approved equal. Pump shall be B&G, Taco or owner approved equal

Existing AHU P-1 specifications
5200 cfm at 3.5" s.p.
10 hp
480v 3 ph
Cooling coil capacity 157000 Btu/hr EAT 78 deg F LAT 57 deg
15 kw warm up heat
Cooling Coil EWT 44 deg F 20.1 gpm 15.6 water temp rise 0.8 ft hd
EAT 78 deg F DB 65 deg F WB
LAT 57 deg F DB 57 deg F WB

Existing Pump CH-8 (P-2) **[CH-city tag no. (P-original plan no.)]**
100 gpm 45 ft hd 5 HP 1750 rpm
480 volt 3 phase
Serves Police Bldg AHU P-1 & AHU P-2/3

- Purchase and install new AHU to replace existing AHU P-1. AHU shall have VFD with bypass. Provide and install controls and sensors for VFD. AHU shall include but not be limited to: fan section, filter section, cooling coil, heating coil, spacer for future hot water coil, UV light section, and mixing box. Heating coil shall be in reheat position. Electric heat shall have SCR control. Refer to included documents for AHU specifications.
- Connect new AHU to existing chilled water piping and electrical power for motor/VFD and strip heat. Install new CW control valve supplied by control contractor.
- Provide new shut off valves and temperature and pressure gages in chilled water piping on each side of cooling coil.
- Provide new ductwork and transitions as required from sound attenuator to AHU and from outside air louver and return ductwork to AHU.
- Connect new AHU to new ductwork and tie new ductwork into existing.
- Remove internal duct liner from reused ductwork adjacent to AHU and RAF and wrap with insulation in compliance with the North Carolina Energy and Mechanical Codes.
- Provide new base mounted chilled water pumps with variable speed drives to replace existing CH-8 (P-2). Pump shall be equal in capacity and characteristics to existing pump. Existing piping and valves shall be replaced with new piping, fittings, strainers and valves. Existing piping shall be removed starting with the return butterfly valve to the pump and from the pump up to and including the supply butterfly valve. New valves, strainers, PETE'S plugs, pressure gages, flexible connections, and unions shall be installed in the new piping to protect the pump and facilitate pump removal.
- Contractor shall drain CW system as required for system work. Upon completion of work the contractor shall drain the entire CW piping system, flush the system, clean strainers and refill with treated water. Contractor shall submit third party certification of chemical treatment for system.

- All work shall be performed in compliance with Local, State and National codes.
- Contractor shall obtain and pay for all necessary permits.
- Contractor shall schedule all necessary inspections and inform the owner of the time of inspections.
- Contractor shall coordinate all work with existing conditions.
- Drawings are schematic and shall be used for guidance only. Adjust actual layout, connections and installation to accommodate the actual conditions and equipment.
- Contractor shall coordinate all work with City of Rocky Mount and schedule work so as not to interfere with normal City operation.
- City contacts:
  Building Services: Mike Bissette or Chris Carter
- Install new equipment in compliance with the manufacturer's recommendations.
- Provide manufacturer's recommended clearances for all equipment. All new piping and ductwork shall be installed to allow for service and equipment removal. Reroute existing piping and ductwork as necessary to provide access to all equipment and serviceable parts.
- Provide all piping, wiring, ductwork, and other devices necessary for a complete and operational system.
- Contractor shall provide all power wiring to Air Handling Unit, Fans, Pumps, Variable Frequency Drives, and motors.
- Insulate all new or disturbed piping and ductwork in compliance with the North Carolina Energy Code.
- Drawings are schematic and show the approximate location of equipment and piping. Contractor shall coordinate work with existing conditions.
- Factory Start-Up Services: An authorized factory start up agent is required. At minimum, (2) two days (12 hours) shall be spent on-site to ensure proper unit operation.
- During the start up period, the Contractor shall instruct the owner's representative on proper care and operation of the system and provide the owner with all pertinent manuals and documentation.
- Contractor shall obtain an independent third party air and water balance of the new AHU and chilled water pumps.

Work by Others:

DDC Building system controls and control wiring shall be provided by others. Contractor shall coordinate his work with the Control Contractor.

Unit Control Interface: New air handlers and fans shall have capability to interface and communicate with the City of Rocky Mount control system. Unit shall have interface card to allow the Unit to communicate directly with the City of

Rocky Mount Control system and through an Ethernet port. All alarms, set points, and other parameters shall be accessible through the City of Rocky Mount Control System.

Warranty: The entire installation shall have a warranty of one year parts and one year labor. The equipment including but not limited to the air handling unit, boilers, variable speed drive and pumps shall have a five year parts and material warranty.

Performance Climate Changer

TRANE	Job Name	City of Rocky Mount AHU Replacement
	User Name	(T06)JD Howard
	Address	Raleigh

Performance Climate Changer	AHU-P1
Quantity	1
Job Comments	

Unless otherwise noted in the product report, performance is certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Air-handling performance data is certified in accordance with AHRI standard 430. Air handlers with plenum fans and vertical draw-thru air handlers where the coil is mounted immediately below the fan section are not covered under the scope of AHRI 430.

All weights and dimensions are approximate. Certified prints on request.

Unit level options

Module Position: 0

Actual airflow	5200 cfm	Single or front discharge - 1K Hz	85 dB
Unit elevation	0.00 ft	Single or front discharge - 2K Hz	80 dB
Unit size	10	Single or front discharge - 4K Hz	75 dB
Integral base frame	2.5in. integral base frame	Single or front discharge - 8K Hz	69 dB
UL listed unit	UL listed unit	Inlet and casing - 63 Hz	92 dB
Circuit number 1	Supply fan motor(s)	Inlet and casing - 125 Hz	82 dB
FLA (CV) circuit 1	9.40 A	Inlet and casing - 250 Hz	74 dB
MCA circuit 1	11.75 A	Inlet and casing - 500 Hz	78 dB
MOP circuit 1	21.15 A	Inlet and casing - 1K Hz	70 dB
Fuse size circuit 1	20.00 A	Inlet and casing - 2K Hz	67 dB
Circuit number 2	UV lights 1	Inlet and casing - 4K Hz	63 dB
FLA (CV) circuit 2	12.00 A	Inlet and casing - 8K Hz	54 dB
MCA circuit 2	15.00 A	Ducted inlet - 63 Hz	91 dB
MOP circuit 2	27.00 A	Ducted inlet - 125 Hz	80 dB
Fuse size circuit 2	25.00 A	Ducted inlet - 250 Hz	72 dB
Product group	Indoor unit	Ducted inlet - 500 Hz	77 dB
Dedicated OA wheel - min face velocity	500 ft/min	Ducted inlet - 1K Hz	69 dB
Dedicated OA wheel - max face velocity	880 ft/min	Ducted inlet - 2K Hz	67 dB
HEPA filter - min face velocity	0 ft/min	Ducted inlet - 4K Hz	62 dB
HEPA filter - max face velocity	600 ft/min	Ducted inlet - 8K Hz	53 dB
High voltage location	Left	Casing - 63 Hz	84 dB
Length	91.880 in	Casing - 125 Hz	76 dB
Width	61.500 in	Casing - 250 Hz	67 dB
Installed weight	1718.6 lb	Casing - 500 Hz	79 dB
Rigging weight	1663.1 lb	Casing - 1K Hz	73 dB
Single or front discharge - 63 Hz	98 dB	Casing - 2K Hz	52 dB
Single or front discharge - 125 Hz	91 dB	Casing - 4K Hz	37 dB
Single or front discharge - 250 Hz	89 dB	Casing - 8K Hz	32 dB
Single or front discharge - 500 Hz	89 dB		

Controls and VFD/starter

Module Position: 0

Factory controls package	No factory mount	LCD screen and keypad	No LCD
Automatic Selection	No auto selection	Design sequence - controls	G
Controller mounting	No mount	Prepackaged solution option used	PPS common configuration not used
Controller type	No controller	Total number of control points	0 control points

Warranty

Module Position: 0

Warranty section	Std. warranty only

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Air-handling performance data is certified in accordance with AHRI standard 430. Air handlers with plenum fans and vertical draw-thru air handlers where the coil is mounted immediately below the fan section are not covered under the scope of AHRI 430.

All weights and dimensions are approximate. Certified prints on request.

Performance Climate Changer

Air mixing section — **Module Position:** 1

Section type	Air mixing section	Design sequence	E
Unit size	10	Filter condition	Mid-life
Mixing section type	reduced length - filter	Filter airflow	5200 cfm
Filter frame	2"	Opening 1 back - airflow	5200 cfm
Filter type 1 - run set	Pleated media - MERV 8	Opening 1 front - airflow	5200 cfm
Side access door location	Left	Opening 1 top - airflow	5200 cfm
Back opening type	High velocity parallel damper	Opening 1 back total pressure drop	1.966 in H2O
Back air path	Entering	Opening 1 top total pressure drop	1.966 in H2O
Back air path type	Return	Greatest entry PD	1.966 in H2O
Back inlet type	Ducted	Opening 1 back - area	2.51 sq ft
Front opening type	Full face opening	Opening 1 back - face velocity	2075 ft/min
Front air path	Leaving	Opening 1 back - pressure drop	1.966 in H2O
Top opening type	High velocity parallel damper	Opening 1 front - area	12.48 sq ft
Top air path	Entering	Opening 1 top - area	2.51 sq ft
Top air path type	Outside	Opening 1 top - face velocity	2075 ft/min
Top inlet type	Ducted	Opening 1 top - pressure drop	1.966 in H2O
Bottom opening type	No opening	Filter area	9.72 sq ft
Right side opening type	No opening	Filter face velocity	535 ft/min
Left side opening type	No opening	Filter pressure drop	0.664 in H2O

Coil section

Module Position: 2

Coil se [3]-1

Section type	Horizontal coil	Fluid type	Water
Unit size	10	Coil fluid percentage	100.00 %
Section size	Medium	Target valve pressure drop	4.00 psig
Coil application	Cooling coil	Coil type	UW
Changeover coil	No	Rows	6 rows
System type	Chilled water	Fin type	Delta flo E (energy efficient)
Coil supply/cabinet side	Left	Fin material	Aluminum fins
Coil casing	Galvanized	Tube diameter	1/2in. tube diameter (12.7 mm)
Coil height	Unit coil height	Tube matl/wall thickness	.016" (0.406mm) copper tubes
Extended drain and vent	No	Corrosion resistant coating	None
Drain pan	Galvanized	Coil face velocity	521 ft/min
Drain connection location	Left	Air pressure drop	0.711 in H2O
Design sequence	E	J trap dimension	2.839 in
Apply AHRI ranges	No	H trap dimension	5.677 in
Coil performance airflow	5200 cfm	Leaving fluid temperature	55.00 F
Coil elevation	0.00 ft	Fluid pressure drop	4.94 ft H2O
Entering dry bulb	80.00 F	Fluid volume	6.64 gal
Entering wet bulb	67.00 F	Fluid velocity	3.05 ft/s
Leaving dry bulb	55.25 F	Coil face area	9.98 sq ft
Leaving wet bulb	54.82 F	Coil rigging weight	163.5 lb
Sensible capacity	141.89 MBh	Coil installed weight	219.0 lb
Total capacity	196.42 MBh	Coil section pressure drop	0.711 in H2O
Nominal fin spacing	120 Per Foot	Section length	14.000 in
Entering fluid temperature	45.00 F	Section height	37.750 in
Fluid temperature rise	10.00 F	Section width	61.500 in
Standard fluid flow rate	39.15 gpm	Section weight	335.0 lb
Coil fouling factor	0.00000 hr-sq ft-deg F/Btu		

UV systems

Module Position: 3

Section type	UV	Access door location	Door - left side

Access section

Module Position: 4

Section type	Access/blank/turning	Top opening	Top opening
Unit size	10	Design sequence	B
Section size	Large	Section length	36.000 in
Side access door location	Left	Section width	61.500 in
Door swing direction	Outward swing	Section height	37.750 in
Back opening	Full Face	Section weight	235.0 lb

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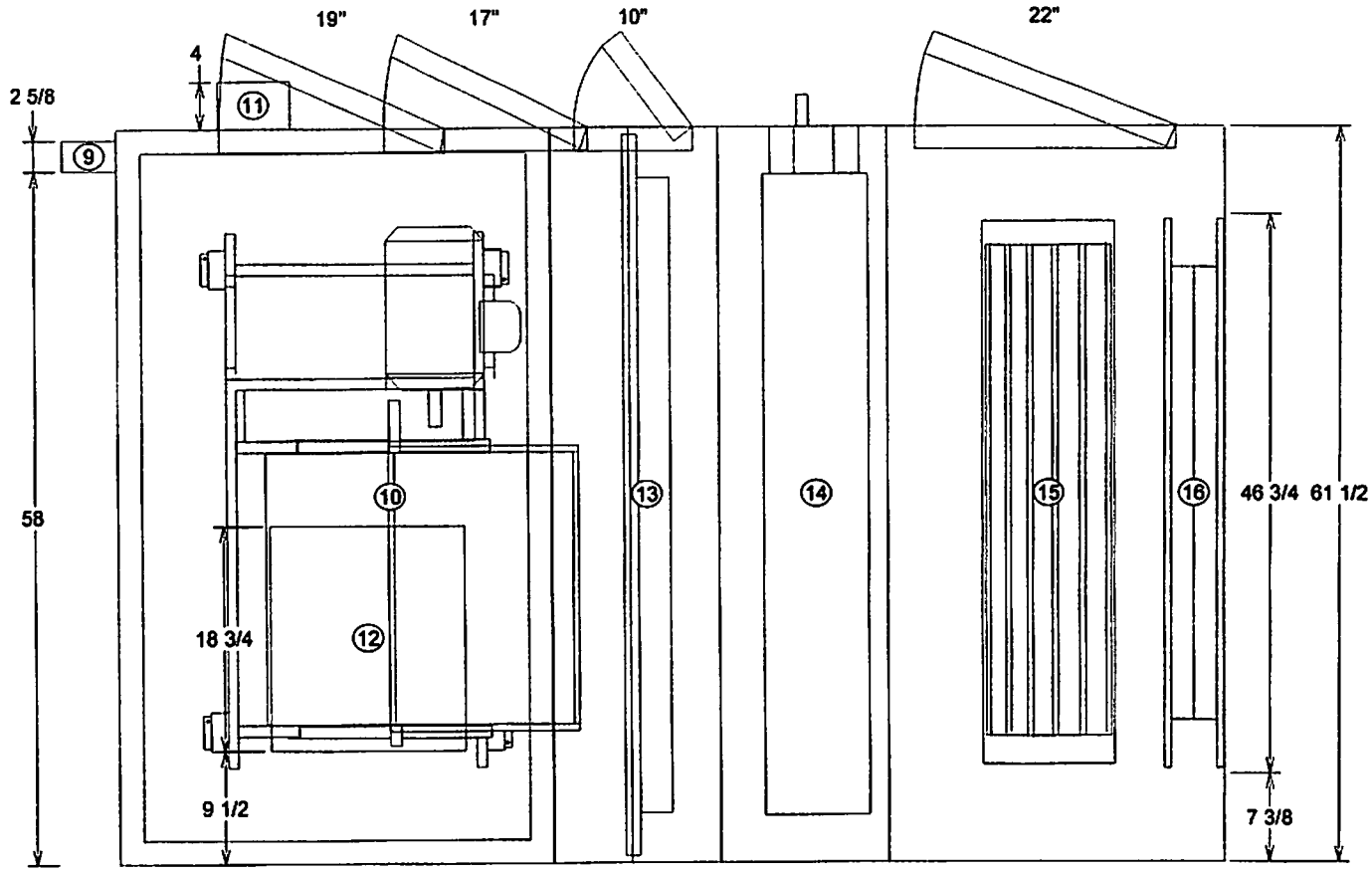
Air-handling performance data is certified in accordance with AHRI standard 430. Air handlers with plenum fans and vertical draw-thru air handlers where the coil is mounted immediately below the fan section are not covered under the scope of AHRI 430.

All weights and dimensions are approximate. Certified prints on request.

Performance Climate Changer

Fan section — Module Position: 6

Fan sec [4]-1			
Section type	Fan	Section width	61.500 in
Fan application	Supply fan	Section weight	734.0 lb
Unit size	10	Static pressure origin	Program calculated
Inlet location	Bottom inlet	Single or front discharge - 63 Hz	98 dB
Fan orientation	Top-back discharge	Single or front discharge - 125 Hz	91 dB
Fan discharge	Top back	Single or front discharge - 250 Hz	89 dB
Side access door location	Left	Single or front discharge - 500 Hz	89 dB
Protective grate	No	Single or front discharge - 1K Hz	85 dB
Drive location	Left side drive	Single or front discharge - 2K Hz	80 dB
Design sequence	H	Single or front discharge - 4K Hz	75 dB
Motor horsepower per fan	7.5 hp	Single or front discharge - 8K Hz	69 dB
NEMA nominal motor efficiency	91.00 %	Inlet and casing - 63 Hz	92 dB
Motor class	NEMA premium compliant ODP	Inlet and casing - 125 Hz	82 dB
Motor voltage	460/3	Inlet and casing - 250 Hz	74 dB
Cycle	60 cycles/sec	Inlet and casing - 500 Hz	78 dB
Drive service factor	1.5 fixed drive	Inlet and casing - 1K Hz	70 dB
Motor RPM	1800	Inlet and casing - 2K Hz	67 dB
Fan airflow	5200 cfm	Inlet and casing - 4K Hz	63 dB
Overall ESP	2.000 in H2O	Inlet and casing - 8K Hz	54 dB
Unit entering ESP	1.000 in H2O	Ducted inlet - 63 Hz	91 dB
Unit discharge ESP	1.000 in H2O	Ducted inlet - 125 Hz	80 dB
Elevation	0.00 ft	Ducted inlet - 250 Hz	72 dB
Minimum temperature	40.00 F	Ducted inlet - 500 Hz	77 dB
Design temperature	70.00 F	Ducted inlet - 1K Hz	69 dB
Fan size and type	15in. diameter AF, H press	Ducted inlet - 2K Hz	67 dB
Total brake horsepower	7.470 hp	Ducted inlet - 4K Hz	62 dB
Total brake horsepower at min temp	7.919 hp	Ducted inlet - 8K Hz	53 dB
Total static pressure	5.341 in H2O	Casing - 63 Hz	84 dB
Speed	2482 rpm	Casing - 125 Hz	76 dB
Outlet area	2.05 sq ft	Casing - 250 Hz	67 dB
Fan outlet velocity	2533 ft/min	Casing - 500 Hz	79 dB
Fan module pressure drop	2.000 in H2O	Casing - 1K Hz	73 dB
Fan discharge loss pressure drop	0.000 in H2O	Casing - 2K Hz	52 dB
Section height	37.750 in	Casing - 4K Hz	37 dB
Section length	42.500 in	Casing - 8K Hz	32 dB



1 2" (NPTE) Return
2 2" (NPTE) Supply
3 3/8" drain (NPTI)
4 3/8" (NPTI) Vent
5 2" (NPTE) Return
6 2" (NPTE) Supply
7 3/8" drain (NPTI)
8 3/8" (NPTI) Vent
9 Wiring raceway front
10 Housed fan - 15in. diameter AF, H press Supply fan 7.5 hp 460/3
11 External junction box LH
12 TPBK discharge opening 16.130 x 18.750
13 2 Row UV light rack
14 Cooling coil - 6 rows Coil type UW
15 Damper top-parallel blade 11.250 x 46.750
16 Damper back-parallel blade 11.250 x 46.750

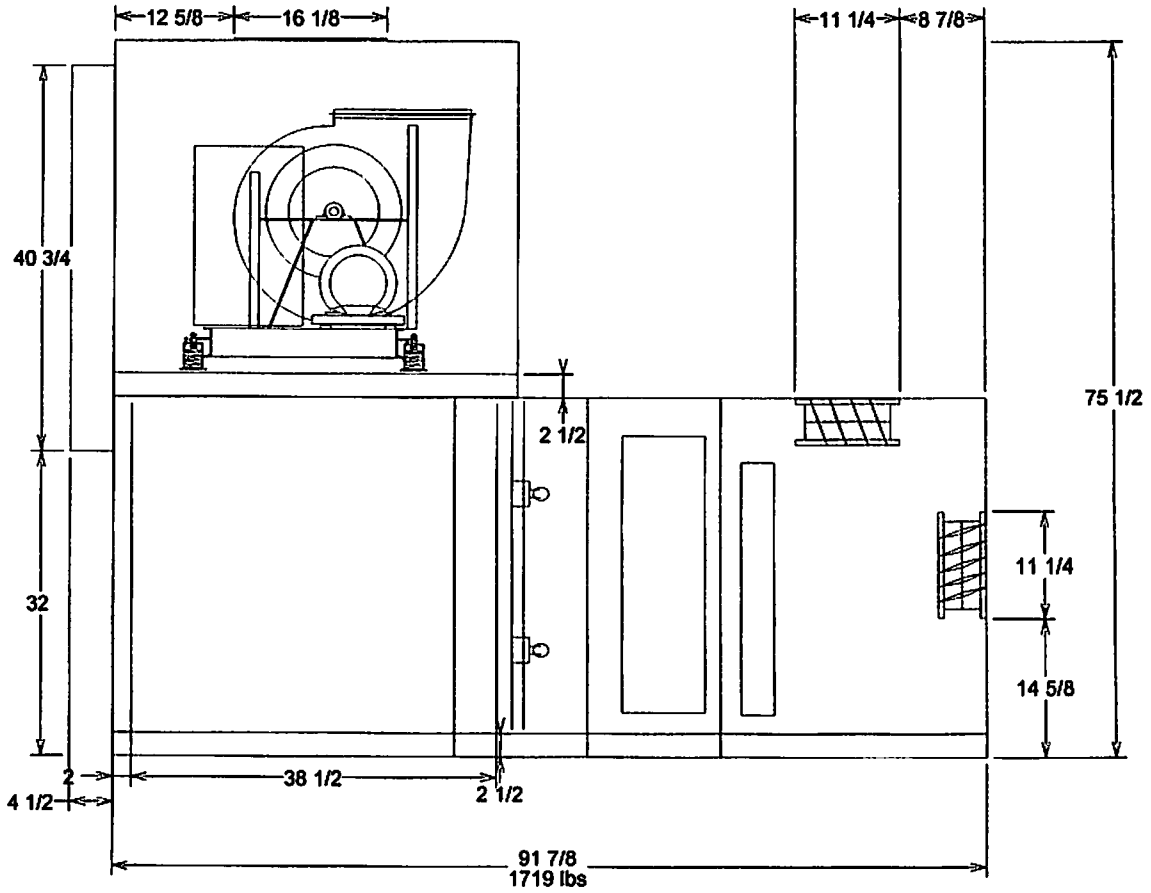
Doors
19 width x 31 height
17 width x 31 height
10 width x 31 height
22 width x 31 height

For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length shown.

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 10	Job Name: City of Rocky Mount AHU Replacement	Unit Casing: 2in Double Wall
Product group: Indoor unit	Actual airflow: 5200 cfm	Proposal Number:
Integral base frame: 2.5in. integral base frame		Tags: AHU-P1
Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 1663.1 lb/ 1718.6 lb

TRANE®
Performance Climate Changer™ Air Handlers



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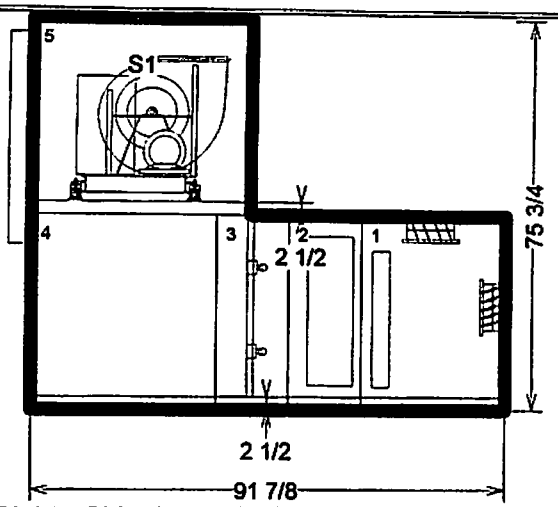
Unit size: 10	Job Name: City of Rocky Mount AHU Replacement	Unit Casing: 2in Double Wall	TRANE® Performance Climate Changer™ Air Handlers
Product group: Indoor unit		Proposal Number:	
Integral base frame: 2.5in. integral base frame	Actual airflow: 5200 cfm	Tags: AHU-P1	
Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 1663.1 lb/ 1718.6 lb	

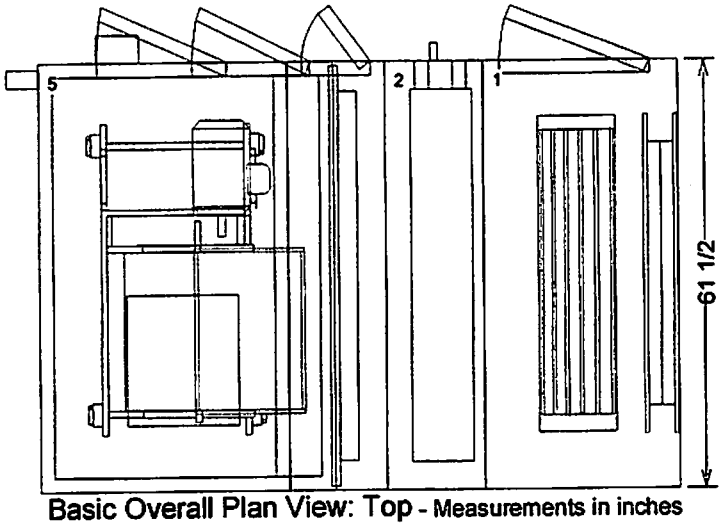


Overall Elevation View: Right - Shipping splits indicated by bold outline. - Measurements in inches

For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length sh

Pos #	Module	Length	Weight
1	Air mixing section	27 7/8	279.60
2	Coil section	14	335.00
3	UV systems	14	135.00
4	Access section	36	235.00
5	Fan section	42 1/2	734.00

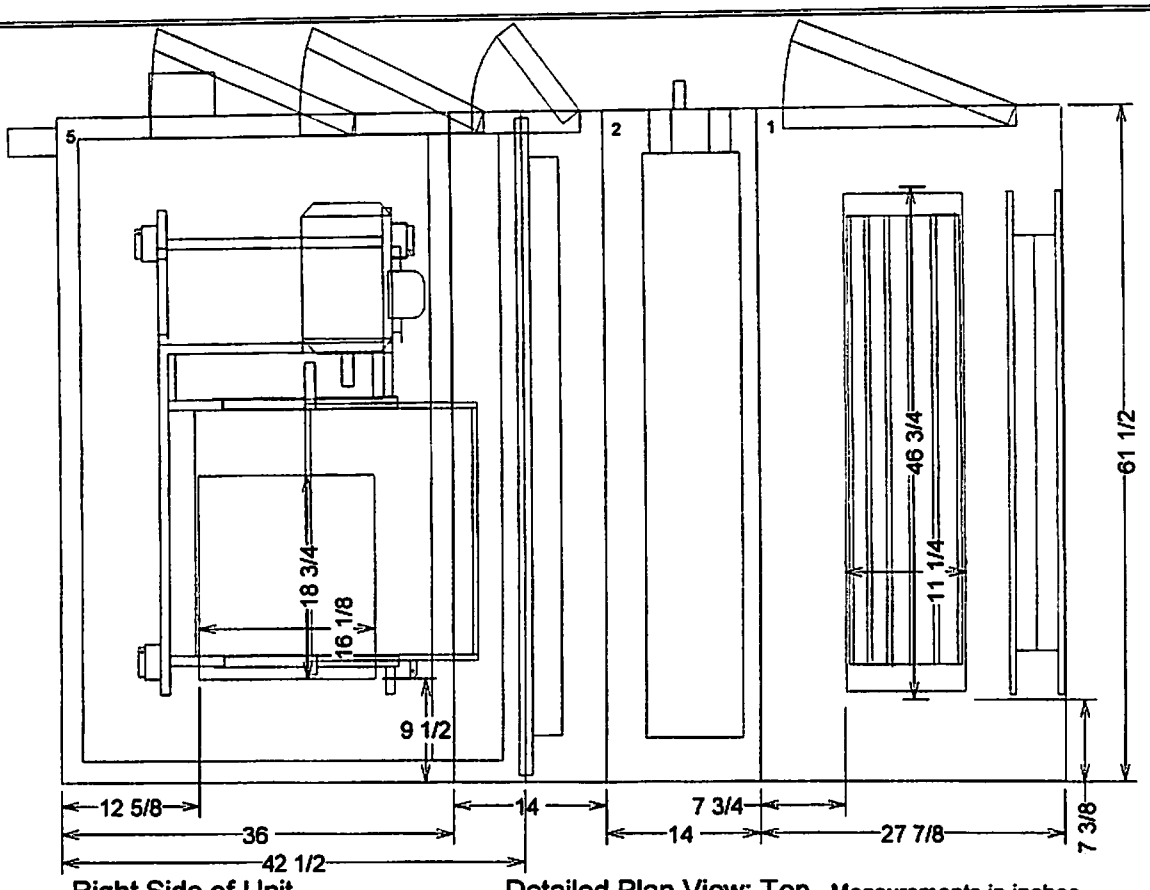
Installed Unit Weight 1718.60 lbs



Basic Overall Plan View: Top - Measurements in inches

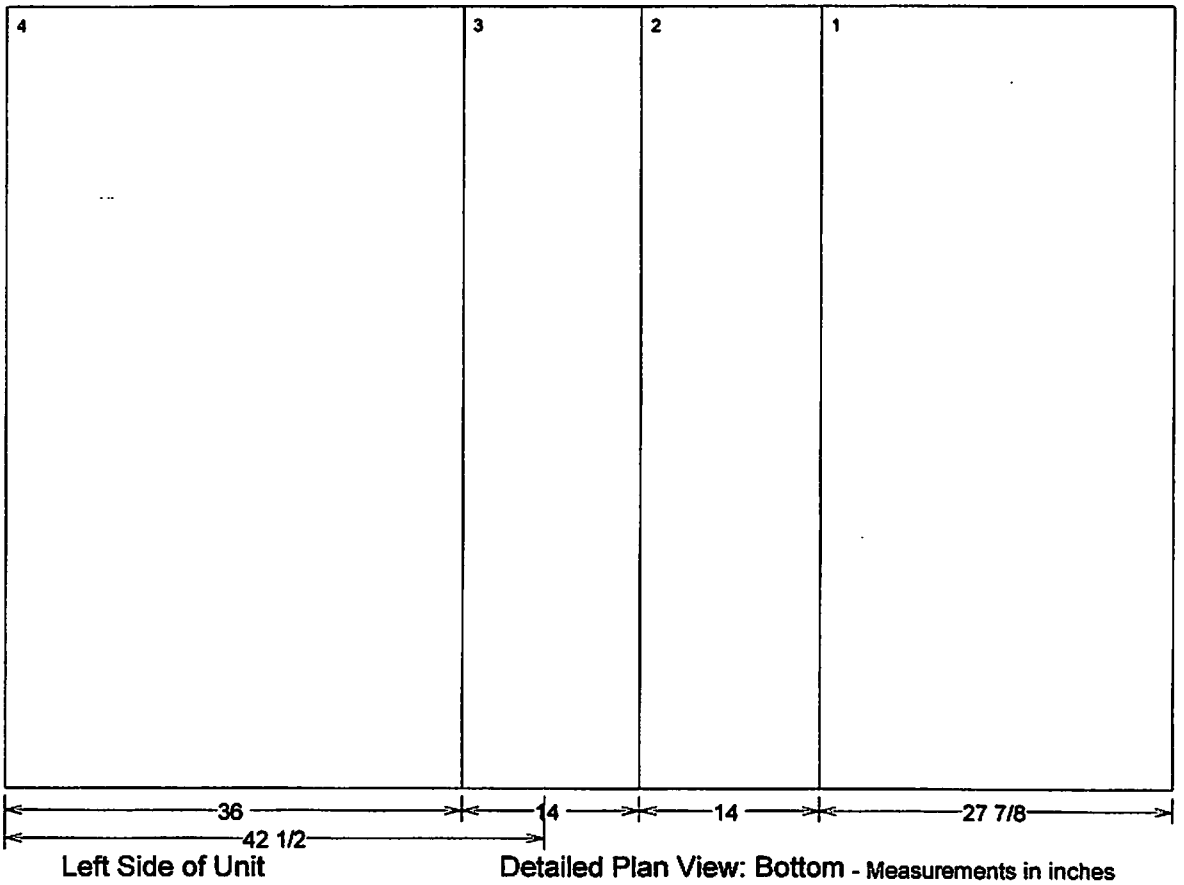
OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 10	Job Name: City of Rocky Mount AHU Replacement	Unit Casing: 2in Double Wall	TRANE®
Product group: Indoor unit	Actual airflow: 5200 cfm	Proposal Number:	Performance Climate Changer™ Air Handlers
Integral base frame: 2.5in. integral base frame		Tags: AHU-P1	
Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 1663.1 lb/ 1718.6 lb	



Right Side of Unit

Detailed Plan View: Top - Measurements in inches



Left Side of Unit

Detailed Plan View: Bottom - Measurements in inches

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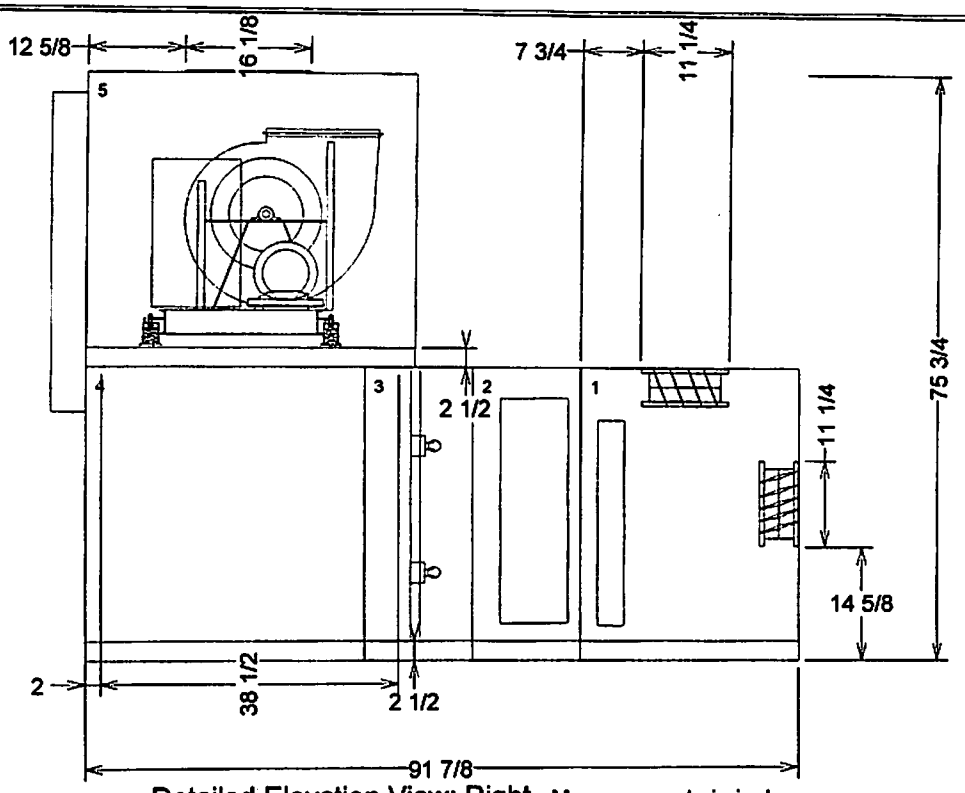
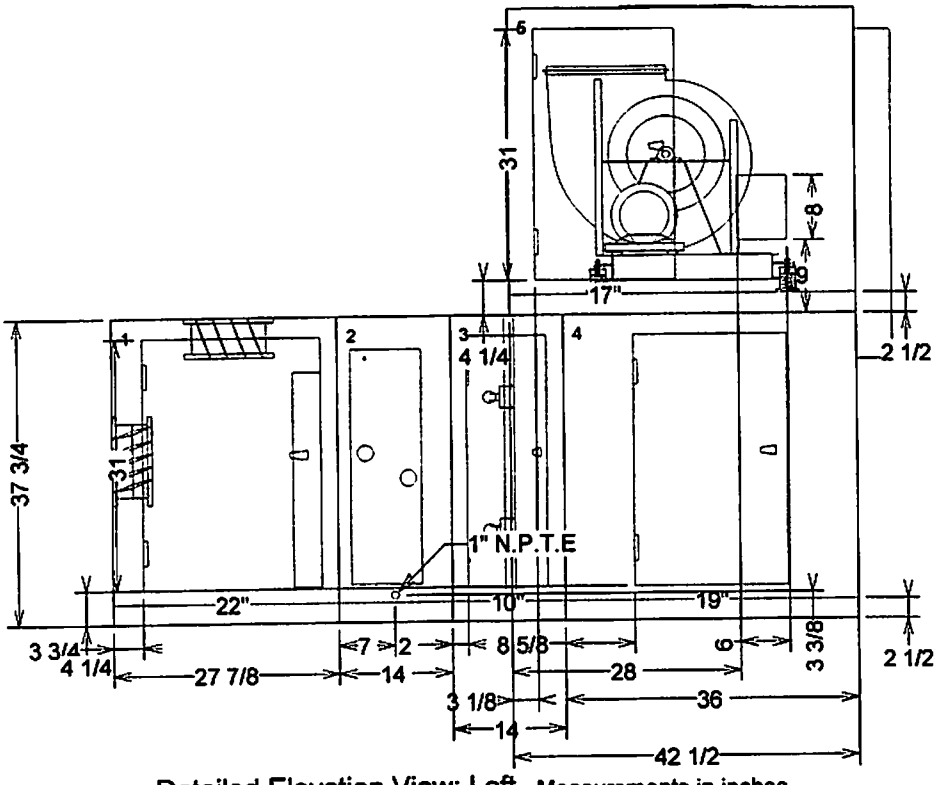
Unit size: 10	Job Name: City of Rocky Mount AHU Replacement	Unit Casing: 2in Double Wall	TRANE® Performance Climate Changer Air Handlers
Product group: Indoor unit	Actual airflow: 5200 cfm	Proposal Number:	
Integral base frame: 2.5in. integral base frame		Tags: AHU-P1	
Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 1663.1 lb/ 1716.6 lb	



Detailed Elevation View: Right - Measurements in inches



Detailed Elevation View: Left - Measurements in inches

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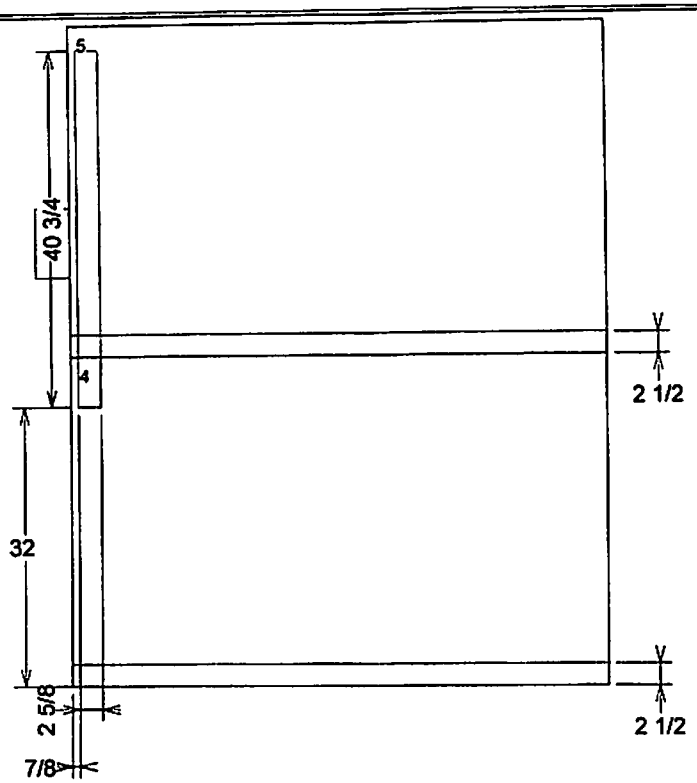
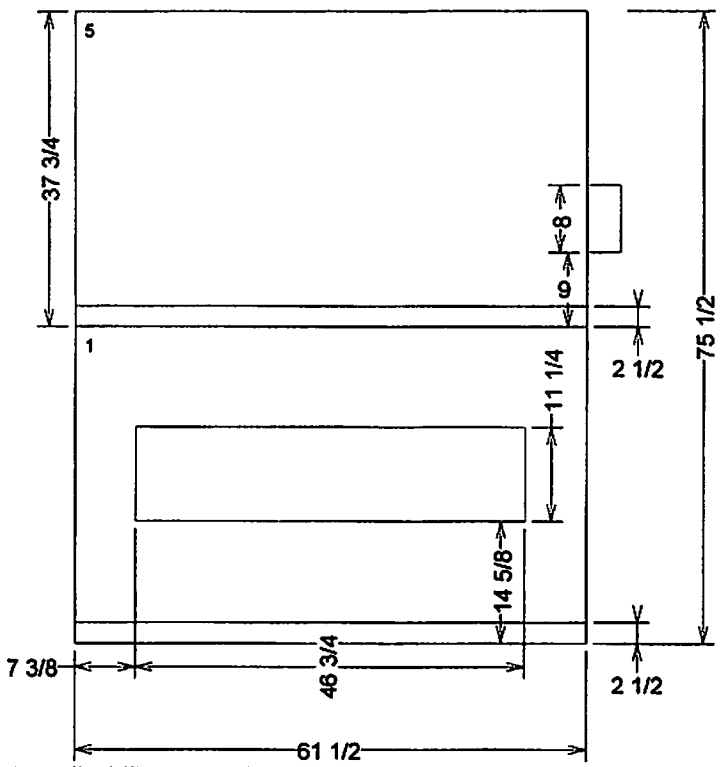
Unit size: 10	Job Name: City of Rocky Mount AHU Replacement	Unit Casing: 2in Double Wall	TRANE
Product group: Indoor unit	Actual airflow: 5200 cfm	Proposal Number:	Performance Climate Changer Air Handlers
Integral base frame: 2.5in. integral base frame		Tags: AHU-P1	
Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 1663.1 lb/ 1718.6 lb	



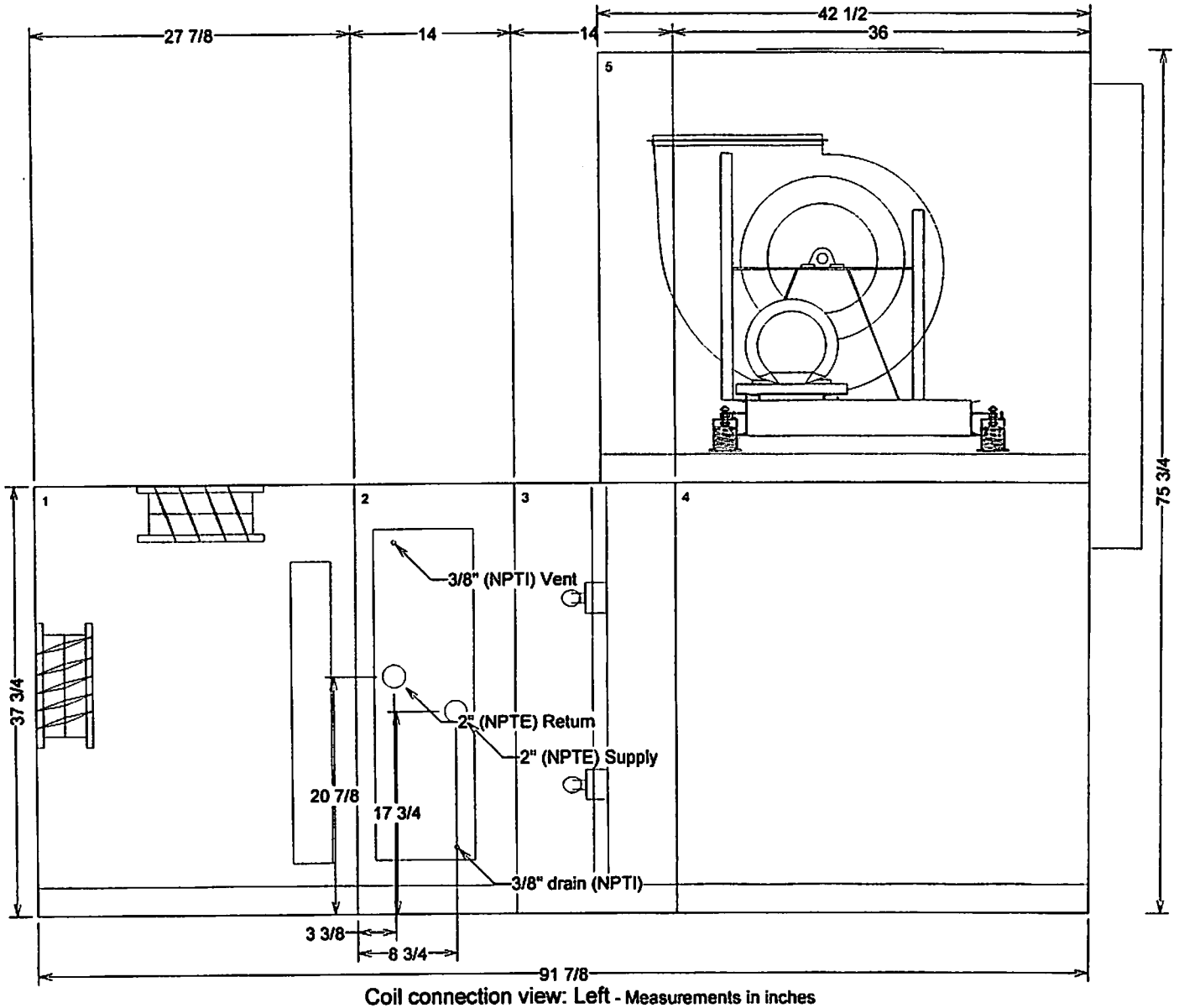
Detailed Elevation View: Front - Measurements in inches



Detailed Elevation View: Back - Measurements in inches

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 10	Job Name: City of Rocky Mount AHU Replacement	Unit Casing: 2in Double Wall	TRANE® Performance Climate Changer™ Air Handlers
Product group: Indoor unit	Actual airflow: 5200 cfm	Proposal Number:	
Integral base frame: 2.5in. integral base frame		Tags: AHU-P1	
Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 1663.1 lb/ 1716.6 lb	

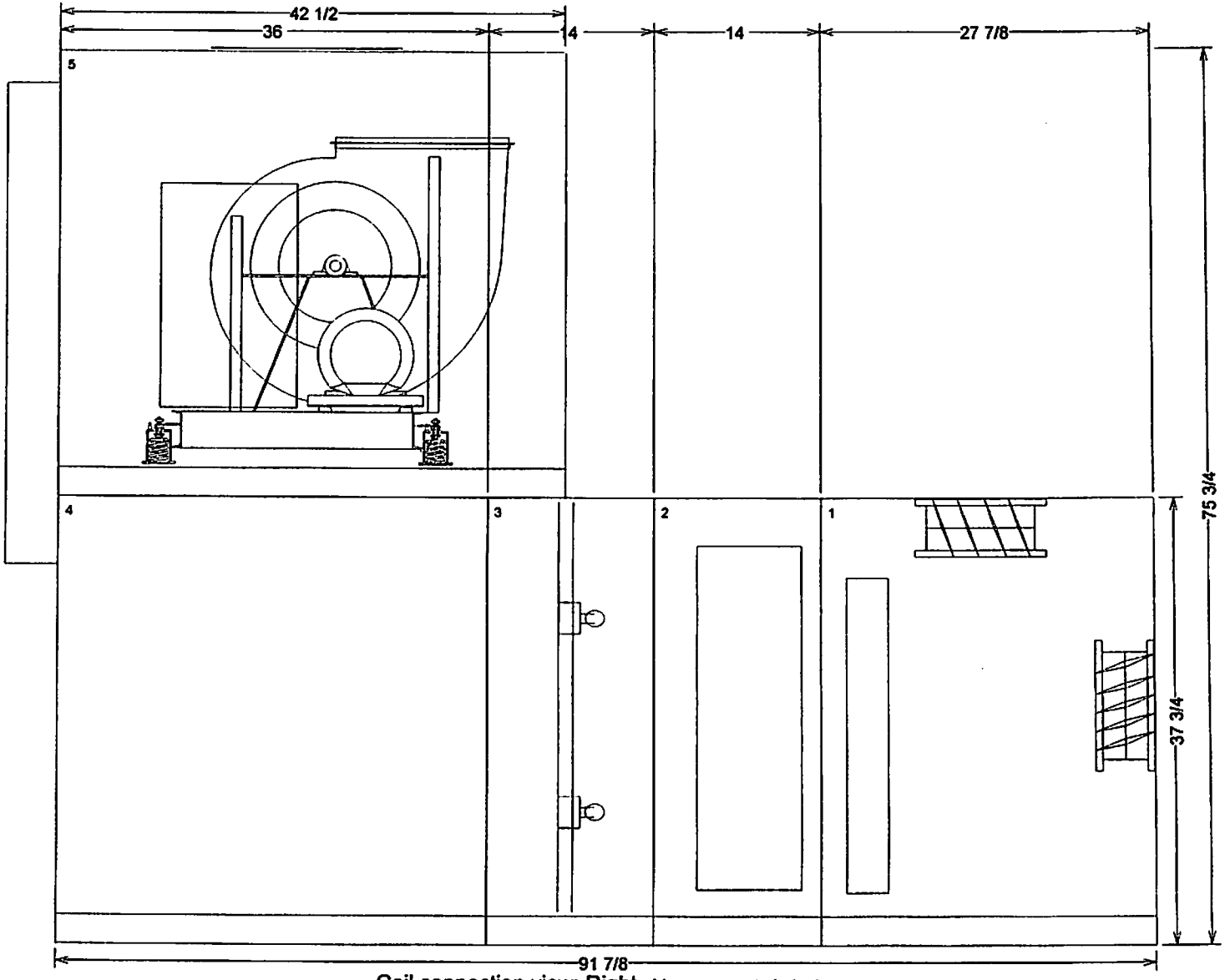


Coil connection view: Left - Measurements in inches

NPTI : National Pipe Thread Internal Connection
NPTE : National Pipe Thread External Connection

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 10	Job Name: City of Rocky Mount AHU Replacement	Unit Casing: 2in Double Wall	TRANE® Performance Climate Changer™ Air Handlers
Product group: Indoor unit	Actual airflow: 5200 cfm	Proposal Number:	
Integral base frame: 2.5in. integral base frame		Tags: AHU-P1	
Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 1663.1 lb/ 1718.6 lb	



Coil connection view: Right - Measurements in inches

NPTI : National Pipe Thread Internal Connection
NPTE : National Pipe Thread External Connection

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

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Product group: Indoor unit	Actual airflow: 5200 cfm	Proposal Number:	
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Paint: Unpainted/field painted outdoor	Sales Office: Raleigh	Rigging/Installed Weight: 1663.1 lb/ 1718.6 lb	

HEATRIX
ELECTRIC DUCT HEATERS

DELL CORP.
245 SOUTH WEST 33rd STREET - FORT LAUDERDALE - FLORIDA 333
(954) 523-6478 FAX (954) 523-6
ALL U.S.A. TOLL FREE 1-800-537-4820
Website: www.dellheatrix.com

SUBMITTAL DATA
STANDARD FEATURES

UNDERWRITERS LABORATORIES LISTED FILE #E37196 AND #E56600 - SUITABLE FOR ZERO CLEARANCE - SLIP IN HEATER CONSTRUCTION - MIN 20 MSG GALAVANIZED STEEL - HINGE COVER AND FALSE BOTTOM ON M-SERIES - ALL WELDED CONSTRUCTION.

AUTOMATIC RESETS CONTROL CIRCUIT – MANUAL RESETS POWERLEGS – TERMINAL BLOCK FOR POWER AND CONTROL CIRCUIT – HIGH GRADE NICHROME OPEN ELEMENT COIL – COMPLETELY PRE-WIRED.

Quote # 35653 - 1

OPTIONAL FEATURES

- ☐ FAN INTERLOCK RELAY
- ☑ AIR FLOW SWITCH NON ADJ
- ☑ POSITIVE PRESSURE SYSTEM
- ☐ NEGATIVE PRESSURE SYSTEM
- ☐ AIR FLOW SWITCH-ADJUSTABLE
- ☑ CONTROL TRANSFORMER CLASS 2-24V
- ☐ CONTROL TRANSFORMER CLASS 1 _____ VOLTS
- ☐ PRIMARY FUSING OF TRANSFORMER
- ☐ SECONDARY FUSING OF TRANSFORMER
- ☐ DEENERGIZING CONTACTOR
- ☑ DISCONNECTING CONTACTOR
- ☑ MAGNETIC CONTACTOR
- ☐ MERCURY CONTACTOR
- ☐ BINARY CONTROL
- ☐ TIME DELAY RELAY BETWEEN STEPS
- ☑ CIRCUIT FUSING PER NEC
- ☐ CIRCUIT FUSING
- ☐ FINNED TUBULAR ELEMENTS
- ☐ FINNED TUBULAR ELEMENTS - STAINLESS
- ☐ FUSED DOOR INTERLOCKING DISCONNECT
- ☐ UNFUSED DOOR INTERLOCKING DISCONNECT
- ☐ ELECTRICAL STEP CONTROLLER
- ☐ PNEUMATICE STEP CONTROLLER
- ☐ ROOM THERMOSTAT
- ☐ DUCT THERMOSTAT
- ☑ 100% SCR CONTROLLER
- ☑ VERNIER SCR CONTROLLER
- ☐ VERNIER BOARD

- ☐ PE CLOSE ON PRESSURE RISE PER STEP
- ☐ INSULATED CONTROL PANEL
- ☐ PILOT LIGHT POWER / CONTROL ON
- ☐ PILOT LIGHT PER STEP
- ☐ PILOT LIGHT NO AIR FLOW
- ☐ TOGGLE SWITCH - CONTROL CIRCUIT ONLY
- ☐ SLIP IN CONSTRUCTION - (FIG #1)
- ☐ BOTTOM MOUNT - (FIG #3)
- ☐ TOP MOUNT - (FIG #3)
- ☐ FLANGE MOUNT - (FIG #2)
- ☐ HEATER WRAP CENTERED ON CONTROL BOX
- ☐ SLIP IN HEATER W/FLANGED PLENUM
- ☐ SLIP IN HEATER W/PLENUM FOR ROUND DUCT
- ☐ DUST TIGHT TERMINAL COVER
- ☐ SCREW ON COVER (NOT UL ON M SERIES)
- ☐ OUTDOOR CONTROL PANEL NEMA 4
- ☐ _____" RECESSED TERMINAL CONTROL PANEL
- ☐ REMOTE CONTROL PANEL - (FIG#4)
- ☐ 80/20 WIRE
- ☐ 35 WATTS PER SQUARE IN ELEMENT WIRE
- ☐ 25 WATTS PER SQUARE IN ELEMENT WIRE
- ☑ STAINLESS STEEL TERMINALS
- ☐ ALL STAINLESS STEEL CONSTRUCTION
- ☐ STAINLESS STEEL CONTROL PANEL
- ☐ PROTECTIVE SCREENS ON AIR ENTERNING SIDE
- ☐ PROTECTIVE SCREENS ON AIR EXITING SIDE
- ☐ HEATRIX CRESCENT ROUND - FIG 7
- ☑ HINGED COVER ON ☐ LEFT SIDE ☑ RIGHT SIDE (STD)
  ☐ TOP SIDE ☐ BOTTOM SIDE (LOOKING INTO CONTROL)
- ☑ ETL LISTED - MODEL: HXOB

ENGINEER BRADY TRANE
DATE 12/26/2013
PROJECT CLIMATE CHANGERS

DELL CORP.
245 Southwest 33rd Street
Fort Lauderdale, FL 33315
Phone (954) 523-6478
Fax (954) 523-6489

HXOB Vertical Single Discharge Submittal Sheet

HEATRIX

FPM 77 = 675
FPM 100 = 1050

26-Dec-13

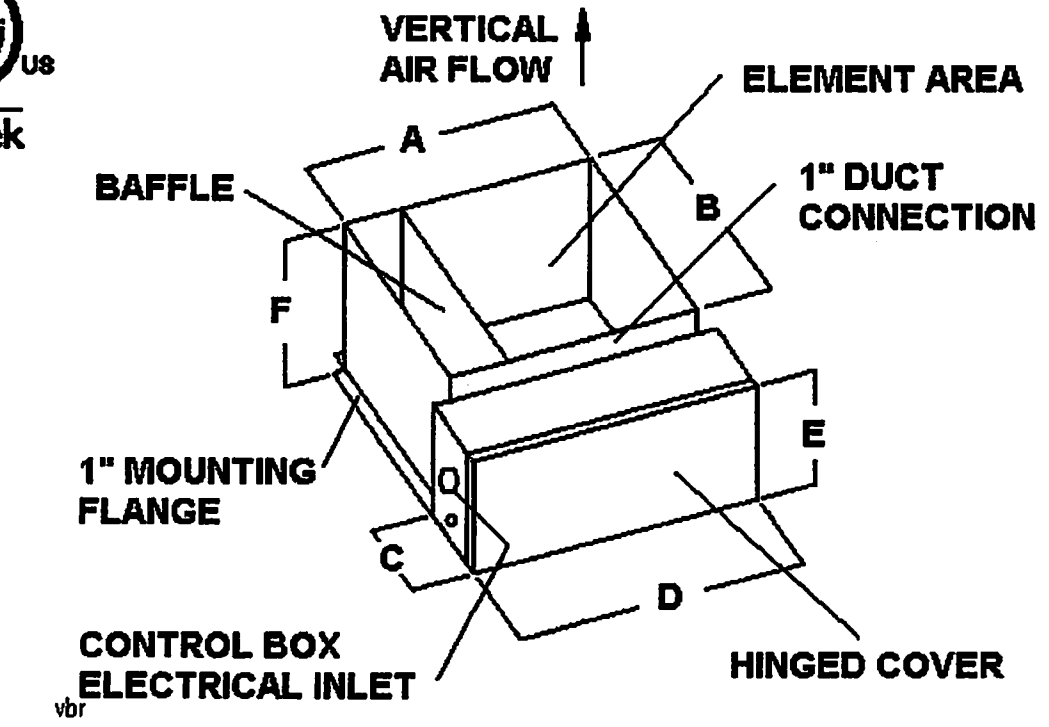
Prepared by: Lucius Lobdell
Ref number: 35653
Ref date: 12/19/2013

Client: 2716 BRADY TRANE

Job Name: CLIMATE CHANGERS

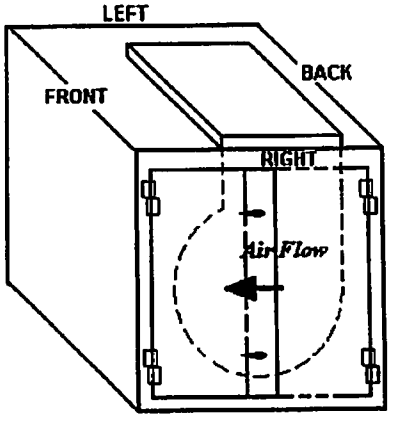
QTY	HEATER MODEL NUMBER	KW	SUPPLY VOLTAGE V	SUPPLY VOLTAGE P	CONT V	STEPS	AMPS	HEATER DIMENSIONS A	B	C	D	E	F	FIG #	REMOTE PANEL CC	DD	EE	DISCHARGE ARRANGEMENT CONTROL BOX	TAG
1	XOB-10PCLCH(15FC)-15-460-3-SC	15	460	3	24	SCR	18.83	16.38	19.00	8.00	18.38	11.00	12.00	3				VERTICAL BACK CONTROL BOX RIGHT	AHU-1
FLA = 18.83							MCA = 23.53							MOCP = 30.					

Intertek

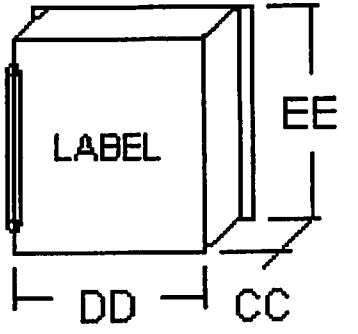


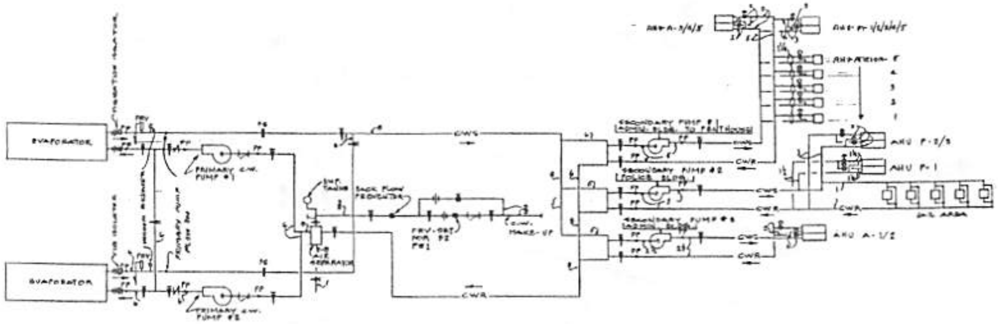
* CONTROL BOX VIEWED WITH AIR IN FACE.
ACCESS CAN BE RIGHT/LEFT - STANDARD
BACK/FRONT - OPTIONAL

VERTICAL DISCHARGE ARRANGEMENT



VERTICAL BACK





CHILLED WATER PIPING DIAGRAM
NO SCALE

CHILLER - TRANE - CVHA 019 9D 01 DIS - 3600 RPM, DIRECT DRIVE, 169 TONS @ 85°F COND. EWT 93.6°F LWT 2 PASS, .001 FOULING FACTOR, 449 GPM @ 15.0 FT. PD
EVAPORATOR 500 GPM 49.82°F EWT 42°F LWT 2 PASS 19.6 FT PD .0005 FOULING FACTOR
480V, 3Φ .863 KW/TON

CARRIER OR YORK CHILLERS MAY BE BID AS AN ALTERNATE BUT THE KW/TON, GPM & PRESSURE DROPS SHALL NOT EXCEED THE VALUES STATED ABOVE

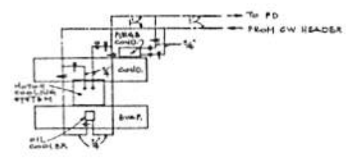
(2) PRIMARY LOOP PUMP - B&G VSC - 6×6×9¼ 500 GPM @ 47' HD 10 HP 3Φ 480V. 1750 RPM

CHILLED WATER PUMP #1 (SECONDARY LOOP) B&G VSC - 5×5×9¼ 285 GPM @ 40' HD 7½ HP 3Φ 480V 1750 RPM

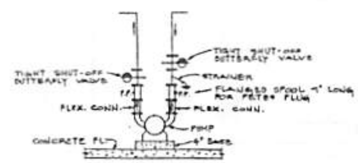
CHILLED WATER PUMP #2 (SECONDARY LOOP) B&G VSC - 4×4×9¼ - 100 GPM @ 45' HD 5 HP 3Φ 480V 1750 RPM

CHILLED WATER PUMP #3 (SECONDARY LOOP) SERIES 80 ... 2×2×7 - 45 GPM @ 30' HD 1½ HP 3Φ 480V. 1750 RPM

(2) CONDENSER WATER PUMP - B&G VSC 6×6×9¼ 507 GPM @ 80' HD 20 HP 3Φ 480V 1750 RPM



CHILLER AUXILIARY WATER PIPING DIAGRAM
NO SCALE



TYPICAL PUMP PIPING DIAGRAM
NO SCALE

DATA INDICATOR STATIONS - ALL TEMP. IN O°F.

1. OUTDOOR AIR TEMPERATURE
2. CHILLER NO. 1 CONDENSER WATER TEMP. IN
3. " " " " " OUT
4. " " CHILLED WATER TEMP. IN
5. " " " " " OUT
6. CHILLER NO. 2 CONDENSER WATER TEMP. IN
7. " " " " " OUT
8. " " CHILLED WATER TEMP. IN
9. " " " " " OUT
10. CHILLED WATER RET. TO PRIMARY LOOP - PUMP 1 AD. PENTHOUSE WATER TEMP.
11. " " " " " " PUMP 2 POLICE BLDG. " "
12. " " " " " " PUMP 3 FIRST FL. AD. BLDG. " "
13. AHU - F-1 RET. AIR TEMP.
14. " " MIXED AIR TEMP.
15. " " SUPPLY AIR TEMP.
16. AHU - F-2/3 RET. AIR TEMP.
17. " " MIXED AIR TEMP.
18. " " SUPPLY AIR TEMP.
19. AHU - A-1/2 RET. AIR TEMP.
20. " " MIXED AIR TEMP.
21. " " SUPPLY AIR TEMP.
22. AHU - A-3/4/5 RET. AIR TEMP.
23. " " MIXED AIR TEMP.
24. " " SUPPLY AIR TEMP.
25. AHU - A-1/2/3/4/5 RET. AIR TEMP.
26. " " MIXED AIR TEMP.
27. " " SUPPLY AIR TEMP.
28. ATRIUM UNIT 1ST FL. RET. AIR TEMP.
29. " " " SUPPLY AIR TEMP.
30. ATRIUM UNIT 2ND FL. RET. AIR TEMP.
31. " " " SUPPLY AIR TEMP.
32. ATRIUM UNIT 3RD FL. RET. AIR TEMP.
33. " " " SUPPLY AIR TEMP.
34. ATRIUM UNIT 4TH FL. RET. AIR TEMP.
35. " " " SUPPLY AIR TEMP.
36. ATRIUM UNIT 5TH FL. RET. AIR TEMP.
37. " " " SUPPLY AIR TEMP.
38. SUPPLY AIR TO JAIL AREA TEMP. FROM MAKE-UP DUCT AFTER HEAT COIL
39. COMPUTER ROOM 4TH FL. AD. BLDG. TEMP.
40.

INDICATING LIGHTS - LED
LABELS - ENGRAVED LAMINATED PLASTIC FOR PANEL & LTS.

EQUIPMENT OPERATION STATUS PANEL
LIGHT "ON" INDICATES EQUIPMENT OPERATING

CHILLER #1	CHILLER #2	AHU-A-1/2	AHU-F-1	ATRIUM 5TH FL.	TEMP. CONT. AIR COMP.
CONDENSER PUMP #1	CONDENSER PUMP #2	AHU-A-3/4/5	AHU-F-2/3	ATRIUM 4TH FL.	TEMP. CONT. MAIN AIR PRESSURE
PRIMARY PUMP #1	PRIMARY PUMP #2	AHU-A-1/2/3/4/5	JAIL EX. FAN	ATRIUM 3RD FL.	SPACE
COOLING TOWER #1	COOLING TOWER #2	TOILET EX. FAN ADMIN. PENTHOUSE	JAIL MAKE-UP AIR FAN	ATRIUM 2ND FL.	SPACE
CHILLED WATER PUMP #1 AD. BLDG. PENTHOUSE	CHILLED WATER PUMP #2 POLICE BLDG.	MAKE-UP FAN AD. PENTHOUSE	POLICE BLDG. 2ND FL. TOILET EX. FAN	ATRIUM 1ST FL.	SPACE
CHILLED WATER PUMP #3 AD. BLDG. 1ST FL.	COUNCIL RM. UNIT	COMMITTEE RM. UNIT	POLICE BLDG. 3RD FL. TOILET EX. FAN - MEN	SPACE	SPACE
SPACE	SPACE	SPACE	POLICE BLDG. 3RD FL. TOILET EX. FAN - WOMEN	SPACE	SPACE
RAF A-1/2	RAF A-3/4/5	RAF A-1/2/3/4/5	RAF F-2/3	SPACE	SPACE

SMITH-WOLLAEGER and ASSOCIATES
CONSULTING ENGINEERS
DURHAM, N.C.
JOB NO. 1176

NORTH CAROLINA REGISTERED ENGINEER 1301 WALTER G. SMITH

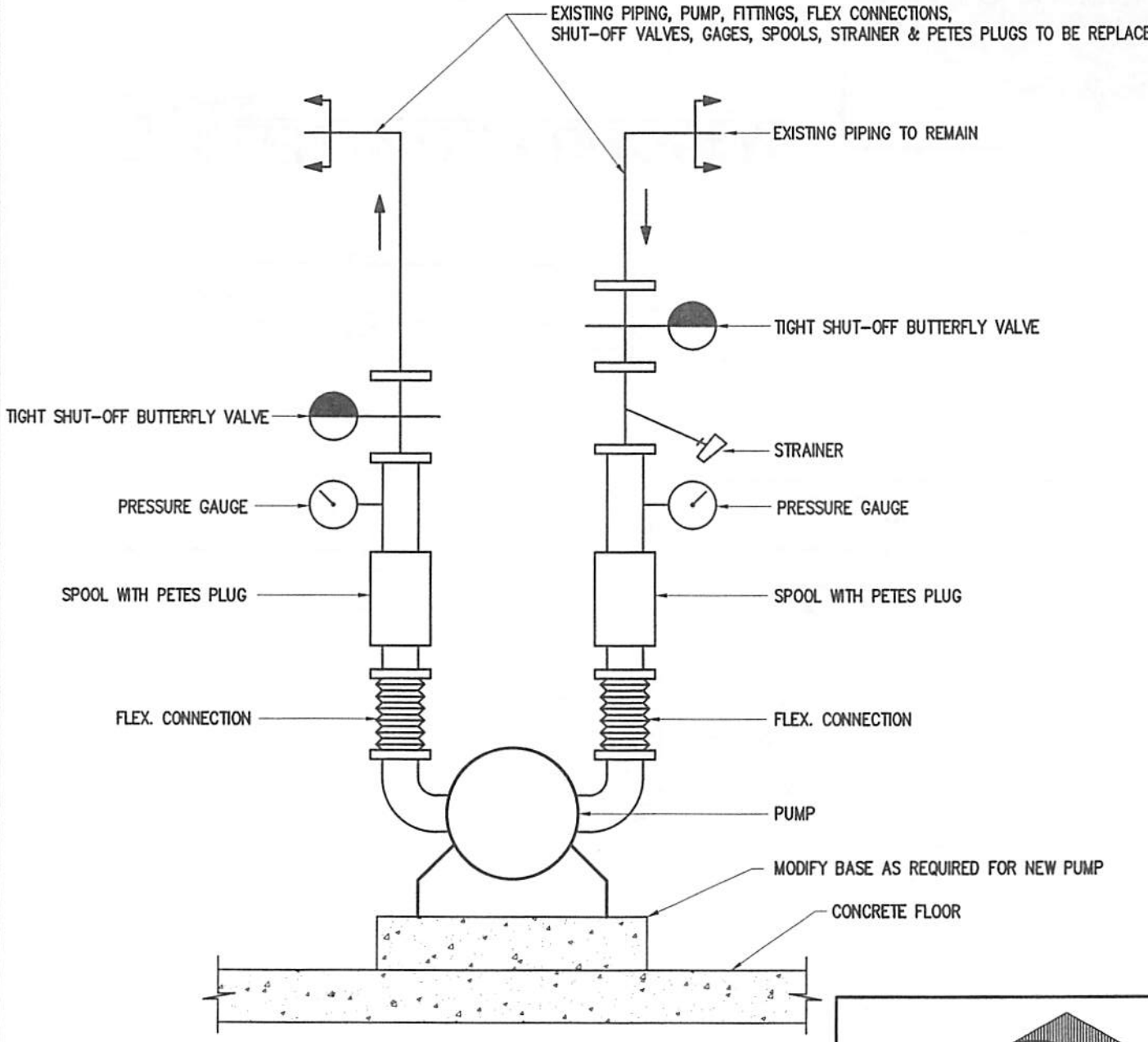
REVISIONS

CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AT JOB.

Edwards and Associates
3123 Sunset Avenue
Rocky Mount, North Carolina

CITY HALL COMPLEX
FOR THE
CITY OF ROCKY MOUNT, NORTH CAROLINA

DRAWN BY WS/CHE
DATE JULY 1980
SHEET 95 OF 110
PROJECT 114
SHEET H-11



PUMP PIPING DIAGRAM

NO SCALE

PREPARED FOR:

THE CITY OF ROCKY MOUNT

ROCKY MOUNT, NORTH CAROLINA

PUMP PIPING DIAGRAM

THE CITY OF ROCKY MOUNT

ROCKY MOUNT, NC

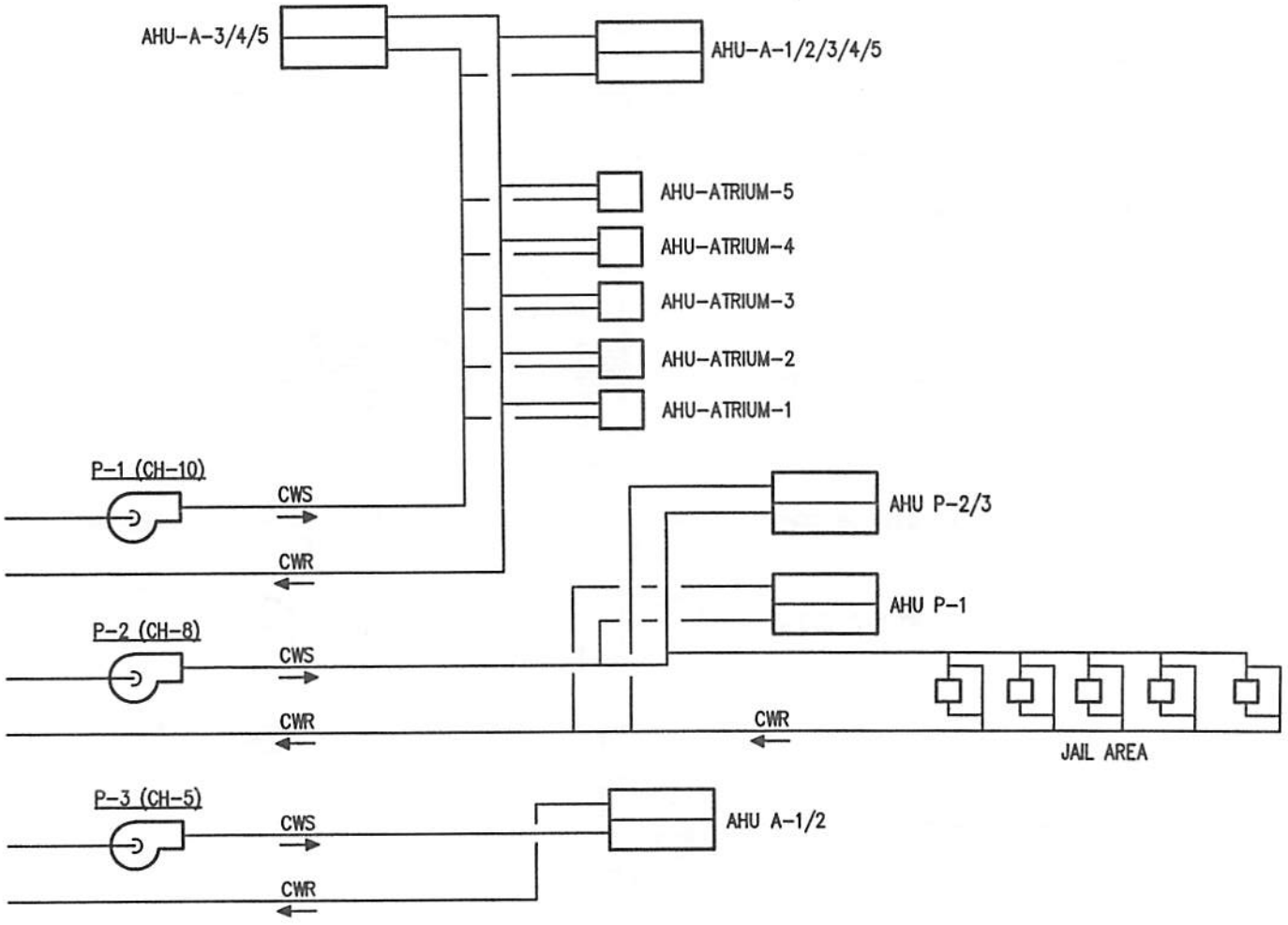
NORTH CAROLINA PROFESSIONAL SEAL 12657 ENGINEER GORDON VESTAL III

V.G. ENGINEERING GROUP, P.C.
PHONE: (252) 813-0954 P.O. BOX 4718 ROCKY MOUNT, NC 27803

DATE: 01-02-14

DRAWN BY: JLT

CHECKED BY: GV/JLT



CHILLED WATER DIAGRAM

NO SCALE

PREPARED FOR:

THE CITY OF ROCKY MOUNT

ROCKY MOUNT, NORTH CAROLINA

PUMP PIPING SCHEMATIC

THE CITY OF ROCKY MOUNT

ROCKY MOUNT, NC

NORTH CAROLINA PROFESSIONAL SEAL 12657 ENGINEER GORDON VESTAL III

1/3/14

V.G. ENGINEERING GROUP, P.C.
PHONE: (252) 813-0954 P.O. BOX 4716 ROCKY MOUNT, NC 27803

DATE: 01-02-14

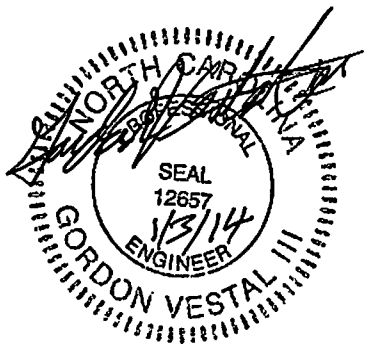
DRAWN BY: JLT

CHECKED BY: GV/JLT

PROJECT #1 & PROJECT #2

GENERAL PLUMBING, HVAC & ELECTRICAL REQUIREMENTS SECTION

GENERAL PLUMBING REQUIREMENTS SECTION



Division 15 - MECHANICAL

Section 15400 - PLUMBING

1. GENERAL PLUMBING REQUIREMENTS

a. CERTIFICATION: Where material or equipment is specified to comply with requirements of independent agencies such as Underwriters Laboratories Inc. (UL), or American National Standards Institute, Inc. (ANSI), the Contractor shall submit proof of such compliance.

b. STANDARD PRODUCTS: The materials to be provided under this specification shall be standard products of manufacturers regularly engaged in the production of such equipment.

c. PRODUCT HANDLING: Equipment and materials shall be properly stored, adequately protected , and carefully handled to prevent damage before and during installation. Equipment and materials shall be handled, stored and protected in accordance with the manufacturer's recommendations. Equipment installed with a factory finish shall be fully protected during construction and damaged equipment shall be repaired or replaced at no cost to the owner.

d. COORDINATION OF WORK: Plumbing work shall be coordinated with other trades. Any drops, rises, or offsets necessary for the proper installation of the work shall be provided. Ductwork shall have right of way over plumbing and electrical work.

e. EQUIPMENT INSTALLATION: Final connections to equipment, including piping shall be provided.

1) Manufacturers Instructions: Equipment shall be installed as recommended by the manufacturer.

2) Pipe, Valve, and Fittings: Whether shown or not unions and isolation valves shall be installed on each side of the water heater, heating/cooling coils, pumps, backflow preventer, control valves and other locations as required to allow the equipment to be removed or isolated for servicing. High points in piping shall be provided with manual vents and all

low points in piping shall be provided with drain valves with hose adaptor fittings, relief valves, flexible connections, and auxiliary piping shall be provided as required by the equipment.

f. IDENTIFICATION OF EQUIPMENT & PIPING: Any identification label that is obscured during construction by paint overspray or other means shall be thoroughly cleaned or replaced. Piping shall be identified as specified by ASME A13.1-81 and as indicated herein:

The contents of the pipe shall be identified with a permanently attached plastic label and shall be installed so as to be visible from normal service areas. The label legend shall clearly identify the contents such as but not limited to: "Hot Water/Chilled Water", "Refrigerant Liquid", "Refrigerant Suction", "Natural Gas", "2PSI Natural Gas" and "L.P. Gas".

Piping labels shall be provided every 6' on center. The label field and letters shall be colored as follows:

CLASSIFICATION OF HAZARDOUS MATERIALS AND DESIGNATION OF COLORS

CLASSIFICATION	COLOR FIELD	COLOR OF LETTERS FOR LEGEND
MATERIALS INHERENTLY HAZARDOUS		
Flammable or Explosive	Yellow	Black
Chemically Active or Toxic	Yellow	Black
Extreme Temperatures or Pressures	Yellow	Black
MATERIALS OF INHERENTLY LOW HAZARD		
Liquid or Liquid Admixture	Green	Black
Gas or Gaseous Admixture	Blue	White

The size of the label field and letters shall be as follows:

SIZE OF LEGEND LETTERS

OUTSIDE DIAMETER OF PIPE OR COVERING IN.	SIZE OF .LETTERS IN.
1/4 to 1 1/4	1/2
1 1/2 to 2	3/4
2 1/2 to 6	1 1/4
8 to 10	2 1/2
over 10	3 1/2

Pipe labels shall be as manufactured by "Seaton" or equal.

g. CLEANING: All piping and equipment shall be cleaned prior to application of paint or coverings.

h. DEFINITIONS:

1) Wherever the words "Approved", "Approval", and "Equal" appear, it is intended that items other than the model numbers specified shall be subject to the approval of the Engineer and Owner.

2) "Provide" as used herein shall mean that the Contractor responsible shall furnish and install said item or equipment. "Furnish" as used herein shall mean the contractor responsible shall acquire and make available said item or equipment and the installation shall be by others. "Install" as used herein shall mean the Contractor responsible shall make installation of items or equipment furnished by others.

2. DESCRIPTION OF WORK: The work includes as indicated providing hot water, chilled water piping, gas piping, drains, water heaters, plumbing fixtures, piping, valves, pipe support systems, and accessories for a complete operating system for hot water and chilled water systems, natural system, L.P. gas and waste and ready for the Owner's intended use.

3. SUBMITTALS shall be made as follows:

   a. Calculations: Where calculations are required, the Contractor shall submit calculations to verify compliance with the specifications.
   b. Manufacturer's Certification: Certification of equipment test data shall be submitted for water heaters.

4. INSTALLATION: Fixtures and equipment shall be installed in accordance with manufacturer's recommendations, workmanlike practice and as indicated.

5. PIPING: It is the intention of the drawings and specifications to provide complete and workable piping systems. All bolts, nuts, gaskets, wall sleeves, hangers, unions, supports, miscellaneous valves and fittings, and other accessories required for a complete installation of the piping and equipment shall be provided at no additional expense to the owner or designer/engineer. Except for hub and spigot, no hub and similar types of pipe, pipe shall be provided with plastic endcaps on each length of pipe. Pipe shall be stored six inches above grade and shall be protected with weatherproof covering. No supply piping joints shall be allowed below the floor slab and all supply piping below the floor shall be copper.

   a. DOMESTIC WATER PIPING:

      1) Above ground Domestic Water: Type L hard-drawn copper tubing, ASTM B88.

         a) Fittings: Wrought copper solder-joint type, ANSI B16.22, or cast-brass solder-joint type, ANSI B16.18.

         b) Solder: Grade Sb5 (95-5 tin/antimony), ASTM B32, with noncorrosive flux. Solder use shall be within pressure-temperature ratings, ANSI B16.22.

         c) Unions and adapters: Cast-brass solder type, ANSI B16.18.

   b. CONDENSATE DRAIN PIPING:

      Type L hard-drawn copper tubing, ASTM B88.

a) Fittings: Wrought-copper solder-joint type, ANSI B16.22 or cast brass solder-joint type, ANSI B16.18.

b) Solder: Grade Sb5 (95-5 tin antimony), ASTM B32, with noncorrosive flux. Solder use shall be within pressure-temperature ratings, ANSI B16.22.

c) Unions and adaptor: Cast brass solder-joint type, ANSI B16.18.

c. GAS PIPING: Schedule 40 carbon steel resistance welded pipe. All pipe 3 inch and larger shall have welded joints.

1) Fittings: Screwed fittings shall be 150 lb. malleable iron.

2) Gas Cocks: Crane no. 298 or equal by Jenkins or Stockham.

3) Valves: 125 lb. standard square head iron lubricated plug cocks with tapered plug and washer lever.

d. CHILLED AND HOT WATER PIPING: Schedule 40 carbon steel resistance welded pipe. All pipe 1/2" to 2 1/2" shall have screwed fittings and piping 3" and larger shall have flanged fittings.

1) Fittings: Screwed fittings shall be 150 lb. malleable iron. Flanges shall be faced true and provided with gasket where recommended by the manufacturer.

2) Valves: 125 lb. standard gate valves with cast iron body and rising stem or OS&Y type.

e. PIPE SLEEVES:

1) Masonry Wall Sleeves: Schedule 40, carbon steel, electric resistance welded, Grade B pipe, ASTM A53.

2) Sleeve Packing: Fire rated walls. U.L. listed systems for 2 hour walls. Ceramic fiber fire-stopping insulation, or equal to Cereblancket-FS as manufactured by Manville, Inc., or Thermafiber as manufactured by U.S. Gypsum.

3) Sealant for sleeves: Provide U.L. listed sealing system. Noncorrosive, silicone-based sealant, Dow-Corning 781, GE 1200 or equal.

f. SPECIALTIES:

1) Escutcheons: Ritter Figure 3A, stamped steel, chromium plated: Beaton and Cadwell; Fee and Mason.

2) Manual Air Vents: Brass or bronze valves or cocks, suitable for 150 PSIG service or 150% of working pressure whichever is greater

6) Reducers and Adaptors: Reducers and adaptors shall be provided as required to connect piping and other items, and shall be threaded, soldered or solvent welded as required. Concentric or eccentric reducers shall be used as indicated on the drawings.

7) Electric Heat Tracing: Self-limiting heat cables shall be used where indicated to protect the water pipe from freezing. The heater cable assembly shall consist of two parallel nickel-plated copper bus wires. A semiconductive PTC polymer shall be extruded over and between the conductors forming an electrically conductive web. An insulating jacket shall be extruded over the heating element core. Heater cable shall be capable of being cut to desired length. The cable shall form a continuous heating circuit. The heat output shall respond to temperature. The heat tracing system shall maintain the water temperature inside the pipe at 40 degrees F with an ambient temperature of 0 degrees F using piping insulation as specified in Section "Pipe Insulation". The heat tracing system shall be installed in accordance with the manufacturer's recommendations and National Electrical Code. The heater cable shall be type XL-TRACE as manufactured by RAYCHEM or equal.

8) Temperature and Pressure (T&P) Relief Valves: A T&P relief valve shall be provided on each water heater to relieve the full heating capacity of the heating unit. Relief valves shall be self-closing temperature pressure type, Watts, B&G, Leslie, or equal with 75 to 150 PSIG range, set at 125 PSIG

and 210 degrees F and approved by ASME.

g. PIPE HANGERS AND SUPPORTS: Pipe hangers and supports shall comply with Manufacturers Standardization Society (MSS) Standards SP-58 and SP-59.

1) Uninsulated Pipe Hangers: Type 1 for steel and cast iron pipe: Type 1, plastic coated, for copper pipe and tubing.

2) Floor supported Pipe: Type 45 or Type 46.

3) Vertical Pipe Support Clamps: Type 8 for steel and Type 8, plastic coated for copper.

4) Trapeze Hangers: Hanger brackets shall be of structural shapes such as angles or channels or commercial systems by Unistrut or B-line systems. Hanger rod shall be 1/2 inch minimum.

h. VALVES: Valves shall be of the types designated and shall be full size of the adjacent pipe unless otherwise noted on the drawings. Valves shall have a working pressure rate of 125psig or 150 percent of the system working pressure, whichever is greater, unless otherwise specified or indicated. Valves shall open by turning counter clockwise and shall have permanent designation of direction of opening on valve or valve operator. Valves installed in insulated pipelines shall have extended necks long enough to clear the insulation. Valves shall conform to ANSI B31.1 through B31.1b, where applicable.

1) Gate Valves: Valves in copper piping shall be NIBCO or equal. Valves shall be bronze body, soldered ends, rising stem, union bonnet, renewable seat. Valves in steel piping shall be cast iron body or ductize iron for valves for 3" or larger and bronze body for 2 1/2" or less. Valves shall conform to MSS Standard SP-80, Type 2, Class 150.

2) Check Valves:

a) Swing check valves shall be Crane 37, Hammond IB940, Stockham B-319 or equal.

b) Valves shall conform to MSS Standard SP-80.

3) Pressure Reducing Valve (PRV): Valve shall be Watts U5B. Unit shall have integral strainer built in thermal expansion bypass check valve. Valve shall have adjustable pressure setting.

4) Hot and chilled water control valves shall be provided by control contractor. Control valves shall be 3-way type and have Cv to match system.

i. PIPE EXPANSION JOINTS AND GUIDES:

1) Pipe Expansion Joints: Expansion joints shall be multi-ply laminated corrugated bellows type of Type 300 series stainless steel bellows.

Expansion joints shall have integral stainless steel liner and external shroud. End fittings shall be flange type.

2) Pipe Guides: Guides shall be constructed of carbon steel and be of the concentric type. Guides shall be factory insulated with calcium silicate complete with vapor barrier and split for assembly.

j. PIPING INSTALLATION:

1) Workmanship: Pipe shall be cut accurately to measurements established at the job site and worked into place without springing or forcing, properly clearing all windows, doors and other openings. Excessive cutting or other weakening of to building structure to facilitate piping installation will not be permitted without written approval. Pipes and tubing shall have burrs removed by reaming and shall be installed to permit free expansion and contraction without damage to joints or hangers. Underground piping shall be installed to provide a minimum of 12 inches of clearance from other piping structures and shall be covered with a bitumastic coating. Schedule 40 piping sleeves shall be installed thru all penetrations and sealed at points of entrance and exit. Penetrations of piping thru fire rated walls, roofs, partitions and floors shall be sealed with U.L.

listed system.

2) Changes in Direction: Changes in direction shall be made with fittings.

3) Pitch of Piping:

   a) Drain Piping: Where elevations are not given, pipe shall have uniform grade of 1/4 inch per foot, except that where such grades on overhead pipe would materially reduce head room, pitch may be reduced to 1/8 inch per foot subject to approval by the Owner. Overhead piping shall be run as high as possible. Where elevations are given, pipe must have a uniform grade between the elevations noted. All piping shall be run in straight lines.

   b) Other Piping: Piping shall be installed with sufficient pitch to ensure adequate drainage and venting. Provide vents at all high points and drains at all low points.

4) Solder joint Connections: Copper tubing shall be cut square; ends shall be reamed, and all fillings and dust shall be wiped from interior of pipe. Joints shall be soldered with solder applied through the feed holes and drawn through the full fitting length. Excess solder shall be wiped from joint before solder hardens.

5) Threaded Connections: Screw-thread joints shall be made with properly cut tapered threads. Joints shall be made tight with a stiff mixture of litharge and glycerin, teflon tape, or other approved thread joint compound applied to the male threads only. Not more than three threads shall show after the joint is made up. Each joint shall be wiped clean after tightening.

6) Unions: Unions shall be face true, provided with 1/16 inch gasket and made square and tight. Union joints shall be provided in each line immediately preceding the connection to each piece of equipment or material requiring maintenance, such as water heater, backflow preventer,

thermostatic mixing valves, pumps, pressure reducing valve, gas fired equipment, air compressor and other similar items.

7) Solvent welded connections: Pipe shall be cut square, cleaned and solvent applied to surfaces as recommended by Pipe and Solvent Manufacturer. Solvent shall be type recommended for use with pipe material and intended service.

8) Compression Gasket: Pipe and fittings shall be hub and spigot plain end type. Hub shall be clean and free of dirt before inserting gasket. Gasket shall be fully inserted into the hub and shall be properly seated. Inner seals of gasket and outside of spigot shall be lubricated with lubricant recommended by gasket manufacturer. Pipes shall be properly aligned before assembly. Spigot shall pass fully through gasket and bottom-out in base of hub. Field cut pipe shall have all burrs and sharp edges removed from spigot.

9) Heat Tracing: All exterior piping and piping exposed to ambient conditions or in unheated areas shall be heat traced.

j. PIPING SPECIALTIES INSTALLATION:

1) Pipe Sleeves: Pipes passing through masonry walls shall be provided with pipe sleeves. Sleeves shall be fitted into place at the time of construction. The space between the pipe sleeve and wall shall be caulked with sealant. Each sleeve shall extend through its respective wall and shall be cut flush with each surface. Sleeves shall be of such size as to provide a minimum of one-quarter inch all-around clearance between bare pipe and sleeve or between insulation and sleeve.

a) Sealant for wall sleeves shall be applied on each end of the sleeve packing as indicated.

b) Pipes passing through walls below grade shall be sleeved as specified. In addition, a waterproofing flashing collar shall be provided with an 8-inch flange cemented to the wall surface or waterproofing.

Flashing shall be connected to the piping with a stainless steel expansion clamp.

2) Escutcheons: Escutcheons shall be provided at all finished surfaces where exposed piping passes through floors, walls, and ceiling. Escutcheons shall be fastened securely to the pipe. Where pipe is insulated, escutcheons shall fit over the insulation.

3) Manual Air Vents: Manual air vents shall be installed at all high points in all water piping. , suitable for 150 PSIG service or 150% of working pressure whichever is greater. Vents shall be suitable for 150 PSIG service or 150% of working pressure whichever is greater

4) Drain valves: Drain valves shall be provided at all low points in piping for water systems to be completely drained. Valves shall be a minimum of 1/2 inch and shall be provided with plugs or caps.

5) Dielectric couplings or fittings shall be used for connections between ferrous and nonferrous piping
to prevent galvanic corrosion. Dielectric unions shall be suitable for the pressures and temperatures of the systems in which they are installed. Union ends shall be threaded, braxed, or soldered to match the adjacent piping. The metal parts of the union shall be separated such that the electrical current is below one percent of the galvanic current which would exist with metal to metal contact.

6) Reducers and adaptors shall be provided as required for connection between piping, equipment, valves, and other items, and shall be threaded, soldered or chemically welded as required. Reducers shall be eccentric or concentric type.

k. PIPE HANGER AND SUPPORT INSTALLATION:

1) Horizontal Pipe Supports: All suspended and floor supported piping shall be provided with adjustable hangers and support which are standard products of manufacturers of the devices. Wire, strap, or other makeshift devices will

not be permitted. Supports shall be installed so to allow vertical adjustment and be to avoid any strain on the piping. In addition to the hanger spacing indicated below, provide additional hangers on each side of large fittings such as strainers, valves, and other items requiring extra support and to prevent sag. A hanger shall be installed within 2 feet of any change in direction of the piping. Maximum hanger spacing shall be as follows:

COPPER TUBING	SPACING
Up to 1-1/4"	6 feet
1-1/2" to 2-1/2"	8 feet
3"	10 feet

STEEL PIPING	SPACING
Up to 1-1/2"	7 feet
2" to 3"	10 feet
4" to 6"	14 feet

Plastic Piping: Pipe shall be supported as recommended by the pipe manufacturer for the temperature and service rating. Condensate and above ceiling drain lines shall be supported at a maximum of 2' on center.

Hanger rods shall be of solid carbon steel and of the following sizes:

PIPE SIZE	ROD DIAMETER
3/4" to 2"	3/8 inch
2-1/2" to 3"	1/2 inch
4" to 5"	5/8 inch

HANGERS:

Hangers for insulated pipelines shall be over the insulation between the hanger and the pipe.

a) Supports shall not be attached to roof decks.

b) Insulation shields shall be provided for all piping where the hanger bears on insulation.

c) Trapeze Hangers: Where piping is run in groups, trapeze type hanger arrangements may be used. Spacing between hangers shall not exceed the maximum hanger spacing for the smallest pipe supported, and hanger rods and concrete inserts shall not exceed the manufacturer's load rating.

2) Vertical Pipe Supports: Risers not exceeding 15 feet in length may be supported by hangers placed not over 1 foot from each elbow.

I. TESTING: All piping shall be tested in accordance with the state and local plumbing code. All new piping shall be thoroughly flushed out under pressure and cleaned of foreign matter before placing the systems in operation. Care shall be taken to prevent pipe compound, scale and other objectionable matter from entering the piping systems. The following tests shall be made in the presence of the Owner/Engineer, who shall be given 5 days notice by the contractor as to his readiness to make such tests. Costs of all tests shall be borne by the Contractor.

1) General: All piping systems, unless otherwise specified, shall be hydrostatically, or pneumatically tested at a pressure of 150 percent (150%) of the system working pressure or 125 psig, whichever is greater. The test period shall be a minimum of 24 hours. The test pressure shall be maintained until each joint and the system has been examined for leakage. Piping may be tested in sections at the Contractor's option; however, before insulation is installed or the piping cleaned, the entire system shall be tested as a unit. Leaks found or a decrease in pressure during testing shall be repaired by resoldering, tightening of existing fittings, or be installing new fittings. Caulking of joints is prohibited. The system shall be retested for a minimum of 2 additional hours following any repairs. This procedure shall be repeated until the system is found to be completely free of leaks. Equipment not designed to withstand the specified test pressure shall be valved off or

otherwise isolated from the system during the test.

2) Natural Gas, Domestic Water, and Hot and Chilled Water Piping (Flushing and Pressure Test): After completion of the final pressure test, the system shall be thoroughly flushed, with water, air or nitrogen as applicable and brought to a pressure of 50 psig. This pressure shall be maintained during the remainder of the construction period and checked to ensure that the line is not damaged by other operations in the construction process. Equipment not designed to withstand the specified test pressure shall be valved off or otherwise isolated from the system during the test.

m. CLEANING: All piping shall be thoroughly cleaned prior to application of paint or coverings. Prior to final acceptance other cleaning shall be done as follows:

1) Cleaning of Exterior Surfaces: All traces of dust, dirt, paint overspray, debris, etc., shall be removed from exterior surfaces of piping,. Wash and wipe, using solvent or detergent as required. Any damage occurring to equipment before final acceptance shall be repaired, or the equipment shall be replaced, at no cost to the Owner, if in the opinion of the Owner, suitable repairs cannot be made. Factory-finished items shall be restored to like-new condition.

2) Cleaning of Piping Systems: All water circulating systems shall be thoroughly flushed and cleaned following pressure testing. Refrigerant piping shall be thoroughly flushed and cleaned after testing and prior to charging. Air and gas piping shall be flushed of all foreign materials before being put into service.

n. PIPE INSULATION

1) MATERIALS:

a) Fire and Smoke Hazard Ratings: Insulation including jacket or facing and the adhesive used to adhere the jacket or facing to the insulation shall have the following fire and smoke hazard rating as tested by the procedures set forth in ASTM E84, NFPA No.

255, or UL No. 723.

Flame spread classification or index not exceeding 25.

Smoke developed not exceeding 50.

Fuel contributed not exceeding 50.

Fuel contributed, PVC fittings covers, not exceeding zero.

b) Acceptable Manufacturers

Manville
Owens-Corning Fiberglass Corporation
Certain-Teed
Rubatex Corporation

2) Type 4 insulation shall be molded, heavy density fiberglass rigid insulation, suitable for 500 degrees F service, with factory-applied all service jacket vapor barrier. Thermal conductivity shall not exceed 0.25 BTU-inch/hour sq. ft.-degree F at a mean temperature of 75 degrees F.

3) Type 5 insulation shall be unicellular elastomeric flexible tubular insulation. Thermal conductivity shall not exceed 0.27 BTU-inch/hour-sq. ft.-degree F at a mean temperature of 75 degrees F. Density shall be a minimum of 5.5 pcf.

4) Piping to be Insulated: Piping shall be insulated as shown in Schedule 1.

Schedule 1

Pipe Insulation Requirements:

Piping shall be insulated in compliance with the current requirements of the NC Energy code.

Domestic Hot Water - Type 4 or 5 Insulation

Domestic Cold Water - Type 4 or 5 Insulation

Hot Water - Type 4 Insulation

Chilled Water - Type 4 Insulation

Condensate Piping - Type 5 Insulation

5) Installation Requirements for Piping:

a) Type 4 Insulation: Insulation shall be installed with joints butted firmly together on interior condensate drains, cold-water piping systems, the vapor-barrier jack laps shall be sealed using self-sealing lap, lap tape, or lap seal adhesive. If self-sealing lap system is used, laps and butt strips shall be stapled wherever there is nonadhesion of the system. Where fish mouth occurs, the section shall be replaced or the fish mouth repaired by applying adhesive under the lap and then stapling. On other systems, insulation shall be installed as specified by the manufacturer or the lap shall be sealed using outward clinching staples spaced approximately 3 inches apart at least 1/4 inch from the edge. Self-adhering butt strips of the same material as the jacked shall be applied to the circumferential joints. Fitting covers: Fittings, including tees, ells and valves, shall be insulted to the same thickness as adjoining insulation, except as otherwise specified. Fitting covers shall be made by fabricating straight-length insulation into short lengths or mitered sections or commercially available molded PVC fitting covers shall be used. If PVC fitting covers are used the thickness shall be in accordance with their manufacturer's recommendations. All fitting covers shall have a vapor-barrier finish.

Piping exposed to weather:

Insulation shall have an aluminum jacket of 0.016-inch nominal thickness. Aluminum jacked shall be secured in place with aluminum bands applied at the circumferential lap and at intervals recommended by

the manufacturer, but not less than 12 inches. Horizontal joints shall lap downward to shed water, and vertical joints shall be sealed with weatherproof coating.

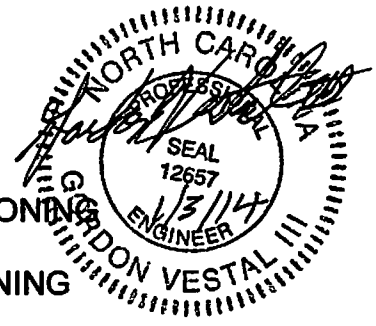
b) Type 5 Insulation: Insulation shall be slipped on the pipe, prior to connection wherever possible and the butt joints shall be sealed with Armstrong 520, Manville 57, or equal adhesive. Where the slip-on technique is not possible, the insulation shall be slit and snapped on the pipes and the seams and butt joints shall be sealed with adhesive. Fitting Covers: Fitting covers shall be fabricated from the insulation according to the manufacturer's recommended procedures. Joints and miter cut pieces shall be sealed with adhesive. Piping insulation exposed to weather: Insulations shall be finished with two coats of Armstrong Armaflex Finish or equal.

r. DISINFECTION: After all tests have been satisfactorily completed, the entire domestic water distribution system, including all supply outlets, shall be disinfected in accordance with the state and local plumbing code.

s. OWNER-FURNISHED, CONTRACTOR INSTALLED EQUIPMENT: Items provided by the owner shall have final plumbing and piping connections made by the Contractor as indicated. The Plumbing Contractor shall make all final connection to kitchen equipment.

12. INSPECTION: The Contractor shall deliver to the Owner a certificate of inspection of plumbing work by the local and state inspector. The report shall include colliform count, lead content and any and all other contaminants required by the local inspector and the state agency having jurisdiction for potable water. Heating Hot Water and Cooling Chilled Water piping shall be flushed, refilled and chemically treated to industry standards for corrosion inhibition.

GENERAL HVAC REQUIREMENTS SECTION



DIVISION 15 - MECHANICAL

SECTION 15800 - HEATING, VENTILATING, AND AIR CONDITIONING

1. GENERAL HEATING, VENTILATING, AND AIR CONDITIONING REQUIREMENTS:

   a. EQUIPMENT MANUFACTURER: All equipment comprising a single system, such as but not limited to package gas heat/electric cool unit shall be designed for use with the other components of the system. The Contractor shall submit shop drawings indicating how the components will be arranged and connected. All equipment of one type shall be produced by the same manufacturer.

   b. CERTIFICATIONS: Where materials or equipment is specified to comply with requirements of independent agencies such as Underwriters Laboratories inc. (UL), American National Standards Institute, Inc. (ANSI), Air-Conditioning and Refrigeration Institute (ARI), American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE), Air Movement and Control Association, Inc. (AMCA), American Gas Association (AGA) and American Society of Mechanical Engineers (ASME),the Contractor shall submit proof of such compliance.

   c. STANDARD PRODUCTS: The materials to be provided under this specification shall be standard products of manufacturers regularly engaged in the production of such equipment.

   d. DEFINITIONS: "Provide" as used herein shall mean that the Contractor responsible shall furnish and install said item or equipment. "Furnish" as used herein shall mean that the Contractor responsible shall acquire and make available said item or equipment and the installation shall be by others. "Install" as used herein shall mean the contractor responsible shall make installation of items or equipment furnished by others.

   e. PRODUCT HANDLING: Equipment and materials shall be properly stored, adequately protected and carefully handled to prevent damage before and during installation. Equipment and materials shall be handled, stored and protected in accordance with the manufacturer's recommendations. Equipment installed with factory finish shall be fully protected during construction and damaged equipment shall be repaired or replaced at no cost to the Owner.

f. COORDINATION OF WORK: Heating, Ventilating, and air conditioning work shall be coordinated with other trades. Any drops, rises, or offsets necessary for the proper installation of the work shall be provided. Ductwork shall have right of way over plumbing and electrical work.

g. EQUIPMENT INSTALLATION: Final connections to and between equipment, including but not limited to ductwork, temperature controls, refrigerant piping, hot/chilled water piping, condensate piping and power wiring from disconnect or junction box shall be provided by the Contractor. Equipment, accessories, and options shall be installed as recommended and required in the manufacturer's written instructions.

h. ELECTRICAL POWER AND CONNECTIONS: Equipment power requirements shall be coordinated with the electrical power indicated on the electrical and mechanical plans. Cord and plug connections shall be suitable for the voltage and amperage shown on the electrical plans.

i. PREPARED OPENINGS: All square and rectangular ducts passing through roof, wall, or masonry shall be installed through prepared openings. The Contractor shall be responsible for the proper installation, reinforcing, size and location of openings.

j. IDENTIFICATION OF EQUIPMENT: Any equipment identification label that is obscured during construction by paint overspray or other means shall be thoroughly cleaned or replaced.

k. CLEANING: All ductwork and equipment shall be thoroughly cleaned prior to application of paint or coverings. Prior to final acceptance, other cleaning shall be done as follows:

1) Cleaning of Exterior Surfaces: All dust, dirt, paint overspray, debris, etc., shall be removed from exterior surfaces of ductwork and equipment. Wash and wipe, using solvent or detergent as required. Any damage occurring to equipment before final acceptance shall be repaired, or the equipment shall be replaced at no cost to the Owner.

2) Cleaning of Interior Surfaces: The inside of plenums,

casings and ductwork shall be cleaned of debris, dirt and trash. Air handling units shall not be operated prior to cleaning of ductwork unless temporary filters are installed. All torn duct lining shall be replaced or repaired using patching/sealing compound. Wipe clean and wash down coil fin surfaces and fan blades. Damage coil fin surfaces shall be straightened with standard coil fin combing tools.

I. AS BUILT DRAWINGS: The Contractor shall provide "As Built" drawings of the equipment, ductwork, piping and control system.

2. DESCRIPTION OF WORK: Refer to included scope of work.

3. SUBMITTALS: The Contractor shall provide performance data, layouts, shop drawings, catalog cuts, diagrams, installation requirements and other information as required to demonstrate compliance with the drawings and the specifications. Submittals shall be made for the following:

a. Air Handling Unit(s)
b. Return Air Fan(s)
c. Pump(s).

4. ELECTRICAL WORK: Contractor shall provide power wiring from the disconnect or motor switch to the mechanical equipment.

5. HVAC EQUIPMENT: Refer to included specifications and schedules for equipment description and capacities.

6. DUCTWORK: All ductwork and fittings shall be constructed of galvanized steel. Ducts shall conform to the dimension indicated and shall be straight and smooth on the inside, with joints, neatly finished. Duct hangers and supports shall be provided as recommended by SMACNA. Supports shall not be attached to plywood roof decks. No cutting or altering of structural members shall be permitted.

a. LOW-VELOCITY DUCTWORK: The ductwork construction, method of reinforcing, gage and other features shall be as recommended in SMACNA HVAC Duct Construction Standards, 1985, except where otherwise specified herein. Duct sealing compound (Hardcast or equal), UL classified with flame-spread and smoke-developed ratings of 20 or less, shall be used to seal all transverse seams and joints in low-velocity supply ductwork.

1) Curved elbows: Curved elbows may be provided in lieu of the rectangular elbows with turning vanes at the option of the Contractor. Construct the fitting so that the inside total flow area at the fitting is equal to or greater than that of the duct immediately upstream and proportion the main and branch areas in accordance with the drawings. Provide splitter dampers at all divided flow fittings and extractors at tap-in branch connections as specified below.

2) Access doors: Access doors shall be provided within 6" upstream of all dampers, duct mounted smoke detectors, elbows and all other locations and as required for service, cleaning and inspection.

3) Fire Dampers: Fire dampers shall be installed in all fire rated walls, partitions, floors, roofs, ceilings and other locations as required by code. The damper shall be installed according to manufacturers recommendations to provide the required rating. The Contractor shall refer to the architectural plans for fire ratings.

d. DUCTWORK SPECIALTIES:

1) FIRE DAMPERS: Dampers shall be type B and have full free area of duct. Damper frame shall be minimum of 22 gage damper blades. Closures spring shall be stainless steel with fusible link. Damper shall be suitable for indicated application. Damper shall be U.L. listed and rated for the applicable fire rating of the wall/partition. all dampers shall meet state and local codes. Damper shall be ULTRASAFE model 150 or approved equal.

2) ACCESS DOORS: Access doors shall have 22 gage galvanized steel frame, 24 gage galvanized steel doors, zinc plated sash and strike, fiberglass insulation and neoprene gasket. Door shall be VENT PRODUCTS 9700 series or approved equal. Doors shall be nominal 12" x 12" or 2" less than the maximum duct dimension.

e. LOUVERS: Louvers shall be of the size indicated and shall have drainable blades and insect screens. Louvers shall be constructed of extruded aluminum and shall have anodized finish. Finish color

shall be coordinated with the Owner.

11. DUCTWORK INSULATION:

a. MATERIALS:

1) Fire and Smoke Hazard Ratings: Insulation and duct lining, including jacket or facing and the adhesive used to adhere the jacket or facing to the insulation or lining, shall have the following fire and smoke hazard ratings as tested by the procedures set forth in ASTM E84, NFPA No. 255 or UL No. 723:

a) Flame spread classification or index not exceeding 25.
b) Smoke developed not exceeding 50.
c) Fuel contributed not exceeding 50.

2) Acceptable Manufacturers:

a) Manville
b) Owens-Corning Fiberglass Corporation
c) Certain-Teed
d) Pittsburg Corning

3) Types of Insulation:

Type 1 insulation shall be flexible blanket fiberglass insulation with factory-laminated, reinforced aluminum-foil vapor-barrier facing laminated to Kraft backing. Thermal conductivity shall not exceed 0.30 BTU-inch/hour-sq. ft.-degree F at a mean temperature of 75 degrees F. Density shall be a minimum of 0.75 pfc.

Type 2 insulation shall be rigid fiberglass insulation with factory applied foil-scrim reinforced Draft vapor-barrier. Thermal conductivity shall not exceed 0.25 BTU-inch/hour-sq. ft.-degree F.

4) Types of Lining:

Type 1: Material shall be suitable for temperatures up to 250 degrees F and velocities up to 4000 fpm. Thermal

conductivity shall not exceed 0.26 BTU-inch/hour-sq. ft.-degree F at a mean temperature of 75 degrees F. Lining shall meet the requirements of the erosion test method described in UL No. 181. Minimum density shall be 1.5 pcf.

b. INSTALLATION:

1) General: Insulation and lining shall be applied in accordance with the manufacturer's instructions, including coverage rates, mastic adhesive and coatings to be used. Insulation shall be applied to provide full insulation thickness on all surfaces, including corners and bends. The Contractor shall remove insulation that does not meet specified requirements or that does not present a neat appearance where exposed to view and shall provide new insulation at no additional expense to the Owner. Where installation requirement of the specification differ from manufacturer's instructions, the more stringent requirements shall apply. Ductwork exposed to weather shall be completely covered with aluminum or galvanized steel which is mechanically fastened and sealed to form a waterproof cover. Ducts exposed on exterior walls and/or roofs shall have full covering over the ducts and wall and/or roof penetration to give a finished appearance. Insulation shall comply with current NC Energy Code requirements.

a) Insulation shall be applied to clean, oil-free, dry surfaces. Insulation shall not be applied to piping and ducts until all required testing has been completed and all necessary repairs have been made.

b) Insulation shall be continuous through sleeves and wall openings.

2) Ductwork Insulation and Lining:

a) Ductwork to be insulated and lined: Ductwork shall be insulated and lined as shown in Schedule 1.

SCHEDULE 1

DUCTWORK INSULATION AND LINING REQUIREMENTS

Supply Ductwork:
Type 1 Insulation

Return Ductwork:
Type 1 Insulation

Exhaust Ductwork:
Type 1 Insulation

Outside Air Supply Ductwork:
Type 1 Insulation

Supply Diffusers/Grilles:
Type 2 Insulation

3) Ductwork and related equipment not to be insulated or lined:

Factory insulated diffusers and plenums.

Factory insulated equipment

4) Installation Requirements for Insulation:

a) Type 1 insulation: Insulation shall be wrapped firmly about the ductwork in a manner to allow full insulation thickness on the surfaces of the duct. Insulation shall be butted tightly at circumferential joints and vapor-barrier facing shall be overlapped a minimum of 2 inches at longitudinal joints. Insulation shall be removed from approximately 6 inches on center with outward clinching staples and then sealed with foil-reinforced vapor-barrier tape of 3 inch minimum width. All facing penetrations shall be sealed to provide a continuous vapor-barrier.

b) Type 2 insulation: Insulation shall be cut to fit the back of the pan of the diffuser with edges turned up to cover the square to round transition. corners shall be miter cut at joints and all joints shall be taped with foil reinforced vapor-barrier tape.
Insulation shall be taped to diffuser and transition to provide a continuous vapor-barrier.

12. TESTING AND BALANCING:

a. DESCRIPTION OF WORK: The work includes testing, adjusting and balancing of AHU air and water flows and Return Air Fan where applicable.

c. QUALITY ASSURANCE: All testing procedures, personnel qualifications, instrumentation and other requirements shall be in accordance with the Associated Air Balance Council recommendations (AABC), Vol. 1, the SMACNA Manual for Balancing and Adjustment of Air Distribution Systems, or the National Environmental Balancing Bureau's (NEBB) "Procedural Standards for Testing Adjusting Balancing of Environmental Systems". Balancing work shall be performed by a firm or individual that is a member of the AABC, NEBB or by a registered professional engineer.

d. INSTRUMENTATION: Instruments used for the balance procedures shall have been calibrated within a period of six months prior to use of the project.

e. SCHEDULING OF WORK: The Contractor shall perform final testing, balancing and adjusting of AHU systems and pumps. The work shall be done as soon as possible after each system has been completed and under full control and full load; if seasonal conditions do not permit full load operation, the work shall be performed under the highest practical load. The Contractor shall coordinate the work of other trades as required for the completion of balancing. Notice shall be given to the Owner so that performance tests may be witnessed.

f. GENERAL PROCEDURES: After completion of the installation and prior to final acceptance by the Owner, all mechanical systems and appurtenances applicable to those systems shall be adjusted and balance to deliver the air quantities indicated. Basic requirements shall be as follows:

1) Check and adjust all fans and connected ductwork as required to meet design conditions of water flow and air

quantities, static pressures and other data as specified or indicated. Adjustments shall be within zero to plus 10 percent of total air for supply fans.

2) Verify proper system operation for heating and cooling and makeup/exhaust air.

3) Check and adjust manual balancing control devices, including dampers and other related items.

4) Mark properly and indicate permanently and legibly the final settings of manual dampers and valves.

g. SYSTEM BALANCING: Before starting work, the Contractor shall familiarize himself with the operation of the systems and the design requirements. Systems and auxiliary components, including the rotation of fans, lubrication of equipment and the condition of coils, valves, strainers, pumps, and filters, shall be checked to confirm that they are in working order and that balancing work can proceed.

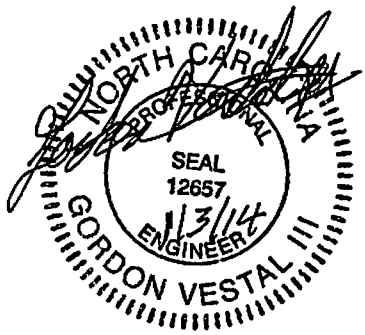
1) Balancing Work: Work shall be in conformance with NEBB or AABC recommendations. Fan speed (rpm) and pump rpm shall be adjusted to provide the designed flows at the specified conditions.

2) Reports: Data shall be reported and submitted To Owner and Engineer.

h. REPORTS: The Contractor shall submit to the Owner/Engineer for approval reports containing air and water balance data. Data sheets shall have been checked and certified by the Contractor before submittal to the Engineer and Owner.

i. INSPECTION AND VERIFICATION: At the time of final inspection if directed by the Owner, the Contractor shall recheck, in the presence of the Owner, specific and random selections of test data recorded in the certified report

GENERAL ELECTRICAL REQUIREMENTS SECTION



DIVISION 16 - ELECTRICAL

SECTION 16000 - GENERAL PROVISIONS

1. GENERAL

a. SCOPE: This Contractor shall provide all materials, equipment and labor necessary to install and set into operation the electrical equipment as shown on the Engineering Drawings and as contained herein.

b. QUALITY ASSURANCE:

1) See the General and Supplementary General Conditions Division 1.

2) All work shall be in accordance with the North Carolina State Building Code, which includes the current edition of the National Electrical Code.

3) The Contractor shall be responsible for obtaining all permits and shall notify inspection departments as work progresses.

4) Wherever the words "Approved", "Approval", and "Equal" appear, it is intended that items other than the model numbers specified shall be subject to the approval of the Engineer.

5) "Provide" as used herein shall mean that the Contractor responsible shall furnish and install said item or equipment. "Furnish" as used herein shall mean the Contractor responsible shall acquire and make available said item or equipment and the installation shall be by others. "Install" as used herein shall mean the Contractor responsible shall make installation of items or equipment furnished by others.

6) All materials and equipment that the Contractor proposes to substitute in lieu of those specified, shall be submitted to the Engineer ten (10) days prior to the bid date for evaluation. The submittal shall include a full description of the material or equipment and description of the material or equipment and all pertinent engineering data required to substantiate the equality of the proposed item to that specified. Items that are submitted for approval after this date will not be accepted.

c. SUBMITTALS:

1) See General and Supplementary General Conditions and Division 1.

2) Within ten (10) days after notification of the award of the contract and written notice to begin work, the Contractor shall submit for approval to the Architect/Engineer a detailed list of equipment and materials which he proposes to use. Items requiring submittal data for approval will be noted at this time. Six (6) sets of submittal data shall be provided for approval.

3) Each submittal shall bear the approval of the Contractor indicating that he has reviewed the data and found it to meet the requirements of the specifications as well as space limitations and other project conditions. The submittals shall be clearly identified showing project name, manufacturer's catalog number and all necessary performance and fabrication data. Detailed submittal data shall be provided when items are to be considered as substitution for specified items. Acceptance for approval shall be in writing from the Engineer.

4) The Contractor shall submit to the Engineer a set of accurately marked-up plans indicating all changes encountered during the construction. Final payment will be contingent on receipt of these as-built plans.

5) The Contractor shall furnish three (3) bound sets of maintenance and operating instructions, part lists, electrical circuit wiring diagrams, all submittal data and sufficient manufacturer's literature to operate and maintain all equipment.

6) The Contractor shall submit to the Engineer a duplicate set of final electrical inspection certificates prior to final payment.

d. PRODUCT DELIVERY, STORAGE AND HANDLING:

1) All material and equipment shall be delivered and unloaded by the Contractor within the project site as noted herein or as directed by the Owner.

2) The Contractor shall protect all material and equipment from breakage, theft or weather damage. No material or equipment shall be stored on the ground.

3) The material and equipment shall remain the property of the Contractor until the project has been completed and turned over to the Owner.

e. WORK CONDITIONS AND COORDINATION:

1) Contractor shall contact utility companies to locate existing utilities serving the building and coordinate new work with existing. Contractor shall repair at not cost to the Owner any damage to existing utilities serving the building.

2) The Contractor shall review all General, Site, Architectural, Plumbing, Mechanical and Electrical plans to establish points of connection and the extent of electrical work to be provided in his contract.

3) This Contractor shall be responsible for all electrical work and making final connections to all equipment installed in his contract. Unless otherwise noted, this Contractor shall wire to disconnect switches, junction boxes, or circuit breakers as provided in his contract.

4) Pipe, conduit and duct chases required for installation of work shall be provided by the General Contractor unless otherwise noted. This Contractor shall be responsible for coordinating the locations and size of all required chases.

5) All work shall be coordinated with other trades. Cutting of new or existing work and subsequent patching shall be approved by the Architect/Engineer and shall be at the Contractor's expense with no extra cost to the Owner.

f. GUARANTEE:

1) See the General and Supplementary General Conditions.

2) Where extended warranties or guarantee are available from the manufacturer, the Contractor shall prepare the necessary contract documents to validate these warranties as required by the manufacturer and present them to the Owner.

2. PRODUCT

a. Materials and equipment shall be new, unless noted otherwisethe highest grade and quality and free from defects or other imperfections. Materials

and equipment found defective shall be removed and replaced at the Contractor's expense.

b. The Contractor shall provide name plates for identification of all equipment, switches, panels, etc. The name plates shall be laminated phenolic plastic, black front and back with white core, white engraved letters (1/4" minimum) etched into white core. Name tags to be mounted with self-tapping pan head sheet metal screws.

c. All materials and equipment shall comply with the Underwriter's Laboratory, Inc Standards or have UL approval, or bear UL re-examination listing where such approval has been established for the type of device in question.

3. EXECUTION

a. INSPECTION:

1) If any part of this Contractor's work is dependent for its proper execution or for its subsequent efficiency or appearance on the character of conditions of contiguous work not executed by him, the Contractor shall examine and measure such contiguous work and report to the Architect/Engineer in writing any imperfection therein, or conditions that render Contractor proceed without making such written report, he shall be held to have accepted such work and the existing conditions and he shall be responsible for any defects in this work consequent thereon and will not be relieved of the obligation of any guarantee because of any such imperfection or condition.

b. INSTALLATION:

1) All work shall be performed in a manner indicating proficiency in trade.

2) All conduit, pipes, ducts, etc., shall be either parallel to building walls or plumb where installed in a vertical position and shall be concealed when located in architecturally finished areas.

3) Any cutting or patching required for installation of this Contractor's work shall be kept to a minimum. Written approval shall be required by the Architect/Engineer if cutting of primary structure is involved.

4) All patching shall be done in such a manner as to restore the areas

or surfaces to match existing finishes.

5) The Contractor shall lay-out and install his work in advance of paving, pouring concrete floors, walks and walls. He shall furnish and install all sleeves or openings through poured masonry floors, walks or walls above grade required for passage of all conduits, pipes or ducts installed by him. The Contractor shall furnish and install all inserts and hangers required to support his equipment.

6) Grounding:

a) All grounding shall be in accordance with the requirements of the NEC.

b) Install continuos grounding conductor in all rigid and flexible conduits and connections. Ground conductor shall be continuous from devices and equipment to the panel and sized in accordance with the NEC requirements.

c) All site lighting fixtures shall be provided with a continuous ground to system ground.

c. PERFORMANCE:

1) The Contractor shall perform all excavation and backfill operations necessary for installation of his work.

d. ERECTION:

1) All support steel, angles, channels, pipes or structural steel stands and anchoring devices that may be required to rigidly support or anchor material and equipment shall be provided by this Contractor.

2) Contractor shall provide and install site lighting bases, supports and other material required for complete installation.

e. FIELD QUALITY CONTROL:

1) The Contractor shall conform to requirements for testing.

2) The Contractor shall test his entire installation and shall furnish the labor and materials required for these tests. Tests shall be performed in accordance with the requirements of the particular section of the specifications and in accordance with the

requirements of the current North Carolina Electrical Code.

3) Additional testing required for compliance with the contract shall be stated in subsequent sections.

f. ADJUST AND CLEAN:

1) All equipment and installed materials shall be thoroughly clean and free of all dirt, oil, grit, grease, etc.

2) Factory painted equipment shall not be repaired unless damaged areas exist. These areas shall be touched up with a material suitable for the intended service. In no event shall name plates be painted.

3) At a scheduled meeting, the Contractor shall instruct the Owner or the Owner's representative in the operation and maintenance of all equipment installed under his contract.

g. FIELD TESTS:

1) Insulation resistance test. After wiring is complete and connected, but before systems are placed in service and branch breakers are closed, the insulation resistance between conductors and ground shall be measured by applying a potential of 500 volts. Reading shall be taken after the voltage has been applied for one minute. The minimum insulation resistance shall be 1,000 OHMS.

2) Grounding System. The grounding system shall be tested to ensure continuity and that ground resistance does not exceed 25 OHMS. The ground resistance of each ground rod shall be measured. The Contractor shall submit to the Owner and indicate on as built drawings the location and resistance of each ground rod as well as the soil conditions at the time of the measurements. Ground resistance measurements shall be made in dry weather and not less than 48 hours after rain with each ground rod isolated from other grounds. Ground resistance shall also be measured for each grounded light or piece of equipment. Additional ground rods shall be provided at no cost to the Owner to meet specific equipment need and Local, State and NEC requirements.

3) The Contractor shall submit a report to the Owner indicating the insulation resistance of each tested circuit and the resistance to ground for each grounding system and grounded light and piece of equipment.

SECTION 16116 - WIRES AND CABLES

1. GENERAL

   a. All conductors shall be properly marked showing manufacturer's name, insulation type, voltage rating and wire size. All insulation is to be rated for a minimum of 600 volts. All conductors shall be copper.

   b. Wire sizes shall be shown. No wire smaller than No. 12 AWG shall be used.

   c. No. 10 AWG conductors shall be used for 20 ampere branch circuit home runs exceeding 50 feet to the junction point. 20 ampere branch circuit wiring shall be No. 10 AWG throughout if the circuit is longer than 100 feet in total length.

2. PRODUCT

   a. All conductors except as otherwise noted on drawings shall be copper and shall conform to Underwriters' Standards. Wires No. 10 and smaller shall be solid. Wires No. 8 and larger shall be stranded.

   b. All wire shall be labeled two (2) feet on center giving size, type, voltage, ratings and manufacture's name. Wire smaller the #4 shall be factory color coded. Wire #4 and larger may be color coded with Okonite 2000 volt colored type at all terminals of the run and at all junctions.

   c. Insulation type is in general as follows:

      1) Type THW or THHN/THWN for feeders and branch circuit conductors.

      2) Branch circuit wire in fluorescent fixture channels shall be type THHN, XHHW or type RHH with cross-linked polyethylene insulation.

3. EXECUTION

   a. Conductors shall be run in conduit and shall be con-tinuous from outlet to outlet. Splices will not be made except within accessible outlet or junction boxes, troughs or gutters.

   b. Solid conductors shall be spliced by using ideal "wing-nuts" 3MCompany's "Scotchlok", or T & B "Piggy" connectors for branch circuit splices.

c. Stranded conductors shall be spliced by approved mechanical connectors plus gum tape, plus friction or plastic tape.

d. On mechanical splices, taps or joints taping shall be with at least two (2) layers of approved gun rubber tape which will be laid on the half-lap followed by at least one (1) layer of friction or plastic tape laid on with half-lap. It is intended that all taping shall be permanently secured insulation equal to that of the wire.

e. All conductors in any conduit shall be at one specific voltage. Conductors of different voltages shall be run in separate conduits.

f. Neutral conductors shall be properly installed as to prevent grounding of the neutrals in any conduit.

g. Conduit, fittings and supports shall be as follows:

1) Interior conduit shall be galvanized electrical metallic tubing (EMT), galvanized rigid steel conduit or intermediate metal conduit (IMC), except where indicated or specified otherwise. Electrical metallic tubing shall not be used in floor lab, outside walls, below slabs on grade or in wet locations. Conduit exposed to the weather shall be galvanized rigid steel or intermediate metal conduit(IMC), except where indicated otherwise. Flexible metal conduit shall be used for connections to motors and other equipment subject to vibration, for connections to recessed or semi-recessed fixtures and where indicated or specified. Plastic conduit may only be used where indicated.

2) Conduit may be exposed where indicated. Exposed conduit shall be run perpendicular or parallel to walls, ceilings, floors and structural members. Maintain a minimum distance of 6 inches from parallel runs of hood exhausts, hot water pipes or any heat generating equipment. Groups of conduit shall be uniformly spaced, both where straight and at turns. Changes in direction of runs shall be made with symmetrical bends and elbows or cast-metal fittings. Field-made bends and offsets, where unavoidable, shall be made with a hickey or bending machine. Conduit shall be cut with a hacksaw or an approved conduit-cutting tool and reamed after threading to remove all burrs. Securely fasten conduit to outlets and to junction and pull boxes to effect firm electrical contact. Join conduit with approved couplings. EMT connectors and couplings shall be of the compression type. Expansion fittings shall be installed in conduit where it passes through structural expansion joints. Trapped conduits shall be avoided. Plaster, dirt

or trash shall be kept out of conduits, boxes, fittings and equipment during construction. Clogged conduits shall be freed of obstructions. Empty conduit systems shall be provided for telephone and communications systems and as indicated and shall have pull lines installed. The pull lines shall be plastic having not less than 200-pound tensile strength. Not less than 12 inches of slack shall be left as each end of the pull lines. Empty conduits not terminating in boxes shall be capped or plugged with permanent fittings designed for the purpose.

a) Conduit support: Conduit shall be secured and supported in accordance with the NEC. Conduits 1/2 inch to 1-1/4 inches shall have 6 feet maximum spacing and conduits 1-1/4 inches shall have 8 feet maximum spacing. Conduits shall be supported within 3 feet of changes in direction. Supports shall be approved pipe straps, wall brackets, hangers or special hanging devices, except no friction type units and no wires will be allowed. Fastenings shall be by wood screws on wood; by toggle bolts on hollow masonry units; by concrete anchors on concrete or brick; and by machine screws, welded threaded studs or spring-tension clamps on steel work. Explosive-drive equipment may be used to make connections when safety regulations allow. Wooden plugs shall not be inserted in masonry and nails shall not be used for fastening. Conduits or pipe straps shall not be welded to steel structures. Holes cut to depth of more than 1-1/2 inches in reinforced concrete beams or to a depth of more than 3/4 inch in concrete joints shall not cut the main reinforcing bars. Holes not used shall be filled. In partitions of light steel construction. sheet-metal screws shall be used. Spring steel fasteners may be used only to support lighting branch circuit conduits to structural steel members. IMC shall be fastened with two locknuts to all sheet-metal boxes and cabinets whre nonmetallic bushings are used or where metallic bushings cannot be brought into firm contact with the box. Locknuts shall have sharp edges for digging into the wall of metal enclosures.

SECTION 16130 - BOXES AND CABINETS

1. GENERAL

a. The Electrical Contractor shall provide junction boxes, pullboxes, cable support boxes and wiring troughs as required by NEC and as otherwise indicated in the drawings.

b. For special accessories, see the Engineering plans.

2. PRODUCTS

a. Outlet and junction boxes shall be 4 inch minimum size, octagonal in ceiling, 4-inch square or rectangular (2" x 4" minimum for walls_ except as noted below. Ceiling outlet boxes shall not be less than 1-1/2 inches deep, but in no case shall the size and depth of boxes be less than that required by the NEC.

b. Where necessary outlet boxes shall be equipped with plaster rings of appropriate depth to finish flush with finished walls. Outlets in exposed masonry wall shall be equipped with extra deep square tile rings so that the box may be installed in the core of the block.

c. Outlets for concealed work and ceiling outlets for exposed work shall be galvanized stamped steel. Boxes shall be as manufactured by Steel City Electric Company, Metropolitan, B & C or approved equal.

d. Wall outlets for exposed conduit work shall be Crouse-Hinds, Appleton or equal, series FS and FD switch and receptacle threaded hub boxes, with matching FS and FD covers.

e. Junction boxes for change of direction or feeder taps shall be furnished where required, shall be of adequate size to prevent crowding conductors in accordance with the requirements of the electrical code and job requirements and shall be accessible.

f. Three service floor boxes shall be used for combination receptacle, communications and alarm as indicated on the drawings. Box shall be Hubbell No. 3SFB-C cast iron box with duplex receptacle plate, telephone data plate and flush mounting cover.

g. Floor boxes shall be Hubbell B-2436, B-4233 or B-4333 cast iron box with brass covers.

3. EXECUTION

a. Boxes and troughs shall be supported independently of conduit entering them. Brackets, threaded rod hangers with lock nuts, bolts or other suitable supporting methods may be used.

b. In general, outlets shall be installed at the heights indicated on the fixture and symbol legends.

c. Each outlet box which supports a fixture shall be provided with a fixture stud into the outlet box. Outlet box and/or fixture stud shall be attached with not less than three screws or bolts.

d. Exterior outlets shall be provided with watertight gaskets.

SECTION 16160 - PANELBOARDS & CIRCUIT BREAKERS

1. GENERAL

a. The Electrical Contractor shall provide all panelboards and circuit breakers as shown on the plans and in accordance with the information contained herein.

b. All equipment shall meet Underwriters' Laboratory standards applicable for equipment specified herein.

c. All panelboards shall be equipped with main and/or branch breakers as shown on the drawings.

d. The equipment shall be manufactured by Square "D", GE, or equal..

2. PRODUCTS

a. CIRCUIT BREAKER PANELBOARDS

1) Panelboards shall be Square "D" Company type as indicated on the schedule or approved equal.

2) Bus bar connections to the branch circuit breakers shall be the "distributed phase" or "phase sequence" type. Single-phase, three wire panelboard bussing shall be such that any two adjacent single pole breakers are connected to opposite polarities in such a manner that two pole breakers can be installed in any location. Three-phase, four wire bussing shall be such that any three adjacent single pole breakers are individually connected to each of the three different phases in such a manner that two or three pole breakers can be installed in any location. All current-carrying parts of the bus assembly shall be copper with tin plating. Mains ratings shall be as shown on the panelboard scheduled on the plans.

3) Terminals for feeder conductors to the panelboard mains and neutral shall be UL listed as suitable for the type of conductor specified. Terminals for branch circuit wiring, both breaker and neutral, shall be UL listed as suitable for the type of conductor specified.

4) Panelboard circuit numbering shall be such that starting at the top, odd numbers shall be used in sequence down the left-hand side and even numbers shall be used in sequence down the right hand side.

5) Cabinets and Fronts:

a) The panelboards bus assembly shall be enclosed in a steel cabinet. The size of the wiring gutters and gauge of steel shall be in accordance with NEMA Standards Publication No. PB1-1971 and UL Standards No. 67 for panelboards. The box shall be fabricated from galvanized steel or equivalent rust-resistant steel.

b) Fronts shall include doors and have flush, brushed stainless steel, cylinder tumbler-type locks with catches and spring-loaded door pulls. The flush lock shall not protrude beyond the front of the door. All panelboard locks shall be keyed alike. Fronts shall have adjustable indicating trim clamps which shall be mounted by completely concealed steel hinges. Fronts shall not be removable with door in the locked position. A circuit directory frame and card with a clear plastic covering shall be provided on the inside of the door. The directory card shall provide a space at least 1/2" high by 3" long or equivalent for each circuit. The directory shall be typed to identify the load fed by each circuit. Fronts shall be of code gauge, full finished steel with rust-inhibiting primer and baked-enamel finish.

6) Circuit Breakers:

a) Circuit breakers shall be quick-make, quick-break, thermal-magnetic, trip indicating and have common trip on all multiple breakers. (Trip indication shall be clearly shown by the breaker handle, taking position between ON and OFF when the breaker is tripped). Branch circuit breakers feeding convenience outlets shall have sensitive instantaneous trip settings of not more than 10 times the trip rating of the breaker to prevent repeated arcing shorts resulting from frayed appliance cords.

b) UL Class A (5 milliampere sensitivity) ground fault circuit protection shall be provided on 120 volt AC branch circuits as specified on the plans or panelboard schedule. This protection shall be an integral part of the branch circuit breaker which also provides overload and short circuit protection for branch circuit wiring. Tripping of a branch circuit breaker containing ground fault circuit interruption shall not disturb the feeder circuit to the panelboard. A

single pole circuit breaker with integral ground fault circuit interruption shall require no more panelboard branch circuit space than a conventional single pole circuit breaker.

c) Connections to the bus shall be bolt-on.

3. EXECUTION

a. Panelboards shall be flush or surface mounted as shown on the plans.

b. All panel enclosures shall be furnished without factory knockouts.

c. Panel enclosures shall not be used as junction or pull boxes for splicing conductors.

d. Each flush mounted panel shall be equipped with two empty one-inch conduits sealed in the wall from a panel to a six-inch square flush mounted box installed above a lay-in type ceiling or flush in the wall at the ceiling for a plaster or spline type acoustical tile ceiling.

e. All panels shall be equipped with neatly typed directory cards attached on the inside of the door.

SECTION 16170 - DISCONNECTS

1. GENERAL

   a. Disconnect switches shall be provided where indicated on the drawings and where otherwise required for a complete installation.

2. PRODUCTS

   a. DISCONNECT SWITCHES:

      1) Disconnects shall be Heavy Duty type manufactured by Square "D", Westinghouse, General Electric or ITE. Disconnects exposed to weather shall be rated NEMA 3R.

      2) Disconnects shall be furnished with factory finish paint and appropriate knockouts for conduit connections.

      3) All disconnects shall have side hinged type doors. Front operated handles will not be permitted.

      4) All fused disconnects shall be equipped with positive pressure fuse clips and shall have visible disconnecting blade switches.

3. EXECUTION

   a. Disconnect switches shall be mounted as indicated on the drawings and shall be independently supported. Conduits entering the disconnect switch shall not be used to support switches.

   b. Unless otherwise noted on the drawings, dual element Fusetron fuses or approved equal shall be used for fused disconnect switches.

CONFLICT RESOLUTION STANDARDS

RULES IMPLEMENTING MEDIATED SETTLEMENT CONFERENCES IN NORTH CAROLINA PUBLIC CONSTRUCTION PROJECTS

Adopted
February 26, 2002

Table of Rules

RULE 1. INITIATING MEDIATED SETTLEMENT CONFERENCES

A. **Purpose of Mandatory Settlement Conferences.** Pursuant to G.S. 143-128 (g) 143-135.26(11), these Rules are promulgated to implement a system of settlement events which are designated to focus the parties' attention on settlement rather than on claim preparation and to provide a structured opportunity for settlement negotiations to take place. Nothing herein is intended to limit or prevent the parties form engaging in settlement procedures voluntarily at any time prior to or during commencement of the dispute resolution process.

B. **Initiating the Dispute Resolution Process**

1) Any party to a public construction contract governed by Article A. Ch. 143 of the General Statutes and identified in G.S. 143-128(g) who is a party to a dispute arising out of the construction process in which the amount in controversy is at least $15,000 may submit a written request to the public owner for mediation of the dispute.

2) Prior to submission of a written request for mediation to the public owner, the parties requesting mediation,

a) If a prime contractor, must have first submitted its claim to the Project Designer for review as set forth in Exhibit A. If the dispute is not resolved through the Project Designer's instructions, then the dispute becomes ripe for mediation in the Formal Dispute Resolution Process, and the party may submit his written request for mediation to the public owner.

B) If the party requesting mediation is a subcontractor, it must first have submitted its claim for mediation to the prime contractor with whom it has a contract. If the dispute is not resolved through the Prime Contractor's involvement, then the dispute becomes ripe for mediation in the Formal Dispute Resolution Process, and the party may submit its written request for mediation to the public owner.

c) If the party requesting mediation is the Project Designer, then it must first submit its claim to the public owner to resolve. If the dispute is not resolved with the public owner's involvement, then the Project Designers' dispute is ripe for mediation in the Formal Dispute Resolution Process, and the Project Designer may submit its written request to the public owner for mediation.

RULE 2. SELECTION OF MEDIATOR

A. **Selection of Certified Mediator by Agreement of the Parties.** The parties may select a mediator certified pursuant to the Rules by agreement within 21 days of requesting mediation. The requesting party shall file with the State Construction Office (hereinafter collectively referred to as the "SCO") or public owner if a non-State project a Notice of Selection of Mediator by Agreement within 10 days of the request; however, any party may file the notice. Such notice shall state the name, address and telephone number of the mediator selected; state the rate of compensation of the mediator; state that the mediator and opposing counsel have agreed upon the selection and rate of compensation; and state that the mediator is certified pursuant to these Rules.

B. **Nomination and Public Owner Approval of a Non-Certified Mediator.** The parties may select a mediator who does not meet the certification requirements of these rules but who, in the opinion of the parties and the SCO or public owner, is otherwise qualified by training or experience to mediate the action.

If the parties select a non-certified mediator, the requesting party shall file with the SCO a Nomination of the Non-Certified Mediator within 10 days of the request. Such nomination shall state the name, address and telephone number of the mediator; state the training, experience or other qualifications of the mediator; state the rate of compensation of the mediator; and state that the mediator and opposing counsel have agreed upon the selection and rate of compensation.

The SCO or public owner shall rule on said nomination, shall approve or disapprove of the parties' nomination and shall notify the parties of its decision.

C. **Appointment of Mediator by the SCO.** If the parties cannot agree upon the selection of a

mediator, the party or party's attorney shall so notify the SCO or public owner and request, on behalf of the parties, that the SCO or public owner appoint a mediator. The request for appointment must be filed within 10 days after a request to mediate and shall state that the parties have had a full and frank discussion concerning the selection of a mediator and have been unable to agree. The request shall state whether any party prefers a certified attorney mediator, and if so, the SCO or public owner shall appoint a certified attorney mediator. If no preference is expressed, the SCO or public owner may appoint a certified attorney mediator or a certified non-attorney mediator.

D. **Mediator Information Directory.** To assist the parties in the selection of a mediator by agreement, the parties are free to utilize the list of certified mediators maintained in any county participating in the Superior Court Mediation Settlement Conference Program.

E. **Disqualification of Mediator.** Any party may request replacement of the mediator by the SCO or public owner for good cause. Nothing in this provision shall preclude mediators from disqualifying themselves.

RULE 3. THE MEDIATED SETTLEMENT CONFERENCE

A. **Where Conference is to be Held.** Unless all parties and the mediator otherwise agree, the mediated settlement conference shall be held in the county where the project is located. The mediator shall be responsible for reserving a place and making arrangements for the conference and for giving timely notice of the time and location of the conference to all attorneys, unrepresented parties and other persons and entities required to attend.

B. **When Conference is to be Held.** The deadline for completion of the mediation shall be not less than 30 days nor more than 60 days after the naming of the mediator.

C. **Request to Extend Deadline for Completion.** A party, or the mediator, may request SCO or public owner to extend the deadline for completion of the conference. Such request shall state the reasons the extension is sought and shall be served by the moving party upon the other parties and the mediator. If any party does not consent to the request, said party promptly communicate its objection to the SCO or public owner.

The SCO or public owner may grant the request by setting a new deadline for completion of the conference.

D. **Recesses.** The mediator may recess the conference at any time and may set times for reconvening. If the time for reconvening is set before the conference is recessed, no further notification is required for persons present at the conference.

E. The mediated settlement conference shall not be cause for the delay of the construction project which is the focus of the dispute.

RULE 4. DUTIES OF PARTIES AND OTHER PARTICIPANTS IN FORMAL DISPUTE RESOLUTION PROCESS

A. **Attendance**

1) All parties to the dispute originally presented to the Designer or Prime Contractor for initial resolution must attend the mediation. Failure of a party to a construction contract to attend the mediation will result in the public owner's withholding of monthly payment to that party until such party attends the mediation.
2) Attendance shall constitute physical attendance, not by telephone or other electronic means. Any attendee on behalf of a party must have authority from that party to bind

it to any agreement reached as a result of the mediation.

3) Attorneys on behalf of parties may attend the mediation but are not required to do so.
4) Sureties or insurance company representatives are not required to attend the mediation unless any monies paid or to be paid as a result of any agreement reached as a result of mediation require their presence or acquiescence. If such agreement or presence is required, then authorized representatives of the surety or insurance company must attend the mediation.

B. **Finalizing Agreement.** If an agreement is reached in the conference, parties to the agreement shall reduce its terms to writing and sign it along with their counsel.

C. **The mediation fee shall be paid in accordance with G.S. 143-128(g).**

D. **Failure to compensate mediator.** Any party's failure to compensate the mediators in accordance with G.S. 143-128(g) shall subject that party to a withholding of said amount of money from the party's monthly payment by the public owner.

Should the public owner fail to compensate the mediator, it shall hereby be subject to a civil cause of action from the mediator for the 1/3 portion of the mediator's total fee as required by G.S. 143-128(g).

RULE 5. AUTHORITY AND DUTIES OF MEDIATORS

A. **Authority of Mediator.**
1) Control of Conference. The mediator shall at all times be in control of the conference and the procedures to be followed.
2) Private Consultation. The mediator may communicate privately with any participant or counsel prior to and during the conference. The fact that private communications have occurred with a participant shall be disclosed to all other participants at the beginning of the conference.
3) Scheduling the Conference. The mediator shall make a good faith effort to schedule the conference at a time that is convenient with the participants, attorneys and mediator. In the absence of agreement, the mediator shall select the date for the conference.

B. Duties of the Mediator.
1) The mediator shall define and describe the following at the beginning of the conference:
   a) The process of mediation;
   b) The difference between mediation and forms of conflict resolution;
   c) The costs of the mediated settlement conference;
   d) That the mediated settlement conference is not a trial, the mediator is not a judge, and the parties retain their legal rights if they do not reach settlement;
   e) The circumstances under which the mediator may meet and communicate privately with any of the parties or with any other person;
   f) Whether and under what conditions communications with the mediator will be held in confidence during the conference.
   g) The inadmissibility of conduct and statements as provided by G.S. 7A – 38.1(1);
   h) The duties and responsibilities of the mediator and the participants; and
   i) That any agreement reached will be reached by mutual consent.
2) *Disclosure.* The mediator has a duty to be impartial and to advise all participants of any circumstance bearing on possible bias, prejudice or partiality.
3) *Declaring Impasse.* It is the duty of the mediator timely to determine that an impasse exists and that the conference should end.
4) *Reporting Results of Conference.* The mediator shall report to the SCO or public owner within 10 days of the conference whether or not an agreement was reached by

the parties. If an agreement was reached, the report shall state the nature of said agreement. The mediator's report shall inform the SCO or public owner of the absence of any party known to the mediator to have been absent from the mediated settlement conference without permission. The SCO or public owner may require the mediator to provide statistical data for evaluation of the mediated settlement conference program.

5) *Scheduling and Holding the Conference.* It is the duty of the mediator to schedule the conference and conduct it prior to the deadline of completion set by the rules. Deadlines for completion of the conference shall be strictly observed by the mediator unless said time limit is changed by a written order of the SCO or public owner.

RULE 6. COMPENSATION OF THE MEDIATOR

A. **By Agreement.** When the mediator is stipulated by the parties, compensation shall be as agreed upon between the parties and the mediator provided that the provision of G.S. 143-128(g) are observed.

B. **By Appointment.** When the mediator is appointed by the SCO or public owner, the parties shall compensate the mediator for mediation services at the rate in accordance with the rate charged for Superior Court mediation. The parties shall also pay to the mediator a one-time per case administrative rate in accordance with the rate charged for Superior Court mediation, which is due upon appointment.

RULE 7. MEDIATOR CERTIFICATION

All mediators certified in the Formal Dispute Resolution Program shall be properly certified in accordance with the rules certifying mediators in Superior Court in North Carolina. * When selecting mediators, the parties may designate a preference for mediators with a background in construction law or public construction contracting. Such requirements, while preferred, are not mandatory under these rules.

All mediators chosen must either demonstrate they are certified in accordance with the Rules Implementing Scheduled Mediated Settlement Conference in Superior Court or must gain the consent of the SCO or public owner to mediate any dispute in accordance with these rules.

* Except when otherwise allowed by the SCO or public owner upon the request of the parties to the mediation.

RULE 8. RULE MAKING

These Rules are subject to amendment by rule making by the State Building Commission.

These Rules are mandated for State projects when the contracting state entity has not otherwise adopted its own dispute resolution provision. These rules are optional for all other projects subject to Article 8, Ch. 143 of the General Statutes.

RULE 9. DEFINITIONS

When the phrase "SCO or public owner" is used in these rules, "SCO" shall apply to state projects, "public owner" shall apply to non-state projects.

RULE 10. TIME LIMITS

On state contracts, any time limit provided for by these Rules may be waived or extended by the SCO for good cause shown.

On non-state contracts, any time limit provided for by these Rules may be waived or extended by the mediator it appoints for good cause shown. If the mediator has not yet been appointed, the designer of record shall decide all waivers or extensions of time for good cause shown.

CERTIFICATE REGARDING DEBARMENT AND SUSPENSION

GOOD FAITH EFFORT

Single Prime bidders who "are not" performing 100% of the project with their workforce employees must seek qualified minority businesses from the North Carolina Historically Underutilized Business (HUB) website at www.doa.state.nc.us. Minority owned businesses found on this website have been certified trough the Statewide Uniform Certification (SWUC) process as a minority owned business. Single prime contractors soliciting bid prices from these companies certified through the SWUC process, and keeping the documentation, can count these contacts towards their good faith effort documentation.

Single Prime contractors contacting minority owned businesses who "have not" been qualified through the SWUC process "can not" use these companies to count towards their good faith effort documentation.

Once you are on the www.doa.state.nc.us. website follow these instructions:

1. On the left hand side of the screen click on the "Search for HUB Vendors" tab. On this screen you can search to see if a minority owned business you would like to use for your good faith effort documentation has been registered through the SWUC process by entering the "Company Name", and "City" in which the business is located, clicking on the "County" and "State", then go to the bottom of the screen and click on the "Search tab.

2. You may also identify other minority owned businesses that have been approved by the SWUC process for the trades you are seeking to include them in your good faith effort documentation. One way of doing this is to click on the "County" your are interested in, select the "Commodity"/"Construction Code" for the trade you are seeking contractors for then go to the bottom of the screen and click on the "Search" tab.

Should you need assistance in accessing the website, identifying minority owned companies or need other information you may contact Delton L. Farmer, Purchasing Manager by calling 252-972-1228.

City of Rocky Mount
Certification Regarding Debarment and Suspension

Contracts for construction or services shall comply with the provisions of 43 CFR Part 12, Subpart C (Uniform Administrative Requirements for Grants and Cooperative Agreements with State and Local Governments). In order to comply with this provision, no contract may be awarded by the grantee (City of Rocky Mount), a subgrantee or contractor of any grantee or subgrantee to any party that has been debarred or suspended under Executive Order 12549. By signing this document, you certify to the best of your knowledge that the company, its principals, and its subcontractors which may be awarded a contract with the City of Rocky Mount:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or criminal offence in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission or embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statement, or receiving stolen property;
(c) Are not presently indicted for or otherwise criminally charged by a governmental entity (Federal, State, or local) with commission of any of the offenses in paragraph (b) of this certification; and
(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

BY_____ **DATE**_____

(Signature of Owner or Authorized Representative)

_____ _____

(Company Name) (Name/Location of Project)

STATE OF NORTH CAROLINA

AFFIDAVIT

COUNTY OF _____

****

I, _____ (the individual attesting below), being duly authorized by and on behalf of _____ (the entity bidding on project hereinafter "Employer") after first being duly sworn hereby swears or affirms as follows:

1. Employer understands that E-Verify is the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hires employees pursuant to federal law in accordance with NCGS 64-25(5).

2. Employer understands that Employers Must Use E-Verify. Each employer, after hiring an employee to work in the United States, shall verify the work authorization of the employee through E-Verify in accordance with NCSG 64-25(a).

3. Employer is a person, business entity, or other organization that transacts business in this State and that employs 25 or more employees in this State. **(Mark Yes or No)**

a. YES _____, or

b. NO _____

4. Employer's subcontractors comply with E-Verify, and if Employer is the winning bidder on this project Employer will ensure compliance with E-Verify by any subcontractors subsequently hired by Employer.

This _____day of _____, 2013.

Signature of Affiant
Print or Type Name: _____

State of_____, County of _____

Signed and sworn to (or affirmed) before me, this the ____ day of _____, 2013

My Commission Expires:

Notary Public

(Affix Official/Notarial Seal)

INSTRUCTIONS TO BIDDERS

1. Samples of items, when required that do not have prior approval, must be furnished free of expense, prior to the opening of bids, and if not destroyed, will upon request, be returned at the bidder's expense. Request for the return of samples must be made 10 days following opening of bids. Each individual sample must be labeled with bidder's name and item number.

2. Price should be stated in units of quantity requested on price proposal sheet(s) with packing included.

3. If the items bid upon have a trade name or brand, such trade name or brand must be stated in the bid.

4. Attach complete specifications for any substitution offered, or when amplification is desirable or necessary.

5. If descriptive matter is attached to bid, bidder's name must be on all sheets pertaining to proposal or bids.

6. Where a brand or trade name appears in the specification, it is understood that it refers to that material or its equivalent.

7. Please address and mail your bid as shown below:

CITY OF ROCKY MOUNT
PURCHASING DEPARTMENT
P.O. DRAWER 1180
ROCKY MOUNT, NC 27802

8. **MARK YOUR BID IN THE LOWER LEFT HAND CORNER OF ENVELOPE AS PER THE FOLLOWING SAMPLE:**

BID REQUEST NO.: (PUT CRM #)
SEALED BIDS ON: (PUT TITLE OF BID)
TO BE OPENED: (PUT DATE, TIME & DAY OF WEEK)

If forwarded other than by mail delivery, bids must be delivered/addressed directly to City of Rocky Mount, Purchasing Department, 331 South Franklin Street, or Purchasing Conference Room, 4th floor, Municipal Office Building, Rocky Mount, NC 27803

***ALL BIDDERS ARE TO READ AND SIGN THE CITY OF ROCKY MOUNT CONDITIONS FOR BID AWARD AND RETURN IT WITH THEIR BID PRICE PROPOSAL. FAILURE TO DO SO MAY RENDER YOU BID AS NON-RESPONSIVE.**

CITY OF ROCKY MOUNT
CONDITIONS FOR BID AWARD

1. All bids and proposals shall be for furnishing apparatus, supplies, materials, equipment and/or work and services in accordance with the applicable plans and specifications prescribed by the City of Rocky Mount from the date shown until date of opening the proposals, the plans and specifications of the proposed work and/or complete description of the apparatus, supplies, materials, or equipment and/or work and services are and will continue to be on file in the office of the Purchasing Manager of the City of Rocky Mount, N.C. during usual office hours 8:30 A.M. to 5:00 P.M., and available to prospective bidders.

2. No proposal will be considered or accepted unless, at the time of its filing the same shall be accompanied by Cash or a Certified deposit check on some bank or trust company insured by the Federal Deposit Insurance Corporation, in an amount of not less than the five percent (5%) of the total proposal. In lieu of making the cash deposit as above provided, such bidder may file a bond executed by a corporate surety licensed under the laws of North Carolina to execute such bonds, all bid bonds and deposits being further conditioned under Section 2, G.S. 143-129 H.B. 634.

3. The City reserves the right to evaluate all bids especially where there is a wide range in specifications or to reject any and all bids and proposals, and further specifically reserves the right to make the award or and/or awards in the best interest of the City of Rocky Mount.

4. The bidder and/or bidders to whom contract is awarded must comply fully with the requirements of General Statutes, Section 143-129 as amended, including entering into contract and/or Purchase Order and the furnishing of a satisfactory surety bond in the full amount of the contract price to guarantee faithful performance of the contract.

5. Time, in connection with discount offered, will be computed from date of delivery of the supplies or materials on delivery at destination when final inspection and acceptance are at those points or from date correct invoice is received if latter is later than the date of delivery. Guaranteed maximum price must be shown in all bids.

6. In case of default of the contractor and/or suppliers, the City may procure the articles, or services from other sources and hold the contractor and/or suppliers responsible for any excess cost occasioned thereby.

7. Payment by City due thirty days after delivery in Rocky Mount and inspection unless otherwise specifically provided: subject to any discounts allowed.

8. By mutual consent, between the City of Rocky Mount and the successful bidder and/or bidders, the base contract may be subsequently extended up to 100 percent (100%) of the dollar value.

9. Positively No Bids considered unless submitted on the proposals furnished by the City of Rocky Mount.

10. All tax imposed upon any article on which you are bidding, shall be shown as a separate item and in no case included with price bid. Failure to comply with these conditions will be considered grounds for rejection.

11. This proposal shall be irrevocable after the public opening and cannot be withdrawn after the time and said deposit shall be forfeited to the City of Rocky Mount as liquidated damages if this bid is withdrawn after the public opening, or if the undersigned bidder fails to execute formal contract and provide satisfactory surety within ten (10) days after the award. If this bid is not accepted within thirty (30) days after the public opening, it shall be deemed rejected and deposit shall be returned to the undersigned bidder.

12. It is specifically agreed as part of the consideration of the signing of this contract that the parties herein, their agent, officials, employees, or servants will not discriminate in any manner on the basis of race, color, creed, national origin, handicapped status, age, religion or sex with reference to the subject matter of this contract no matter how remote. The parties hereto further agree in all respects to conform with provisions and intent of the City of Rocky Mount, North Carolina.

    This provisions being incorporated for the benefit of the City of Rocky Mount and its residents may be enforced as set out in said ordinances, enforcement of these provisions shall be by action for specific performance, injunctive relief, or other remedy as by law provided: and this provision shall be construed in such manner as to prevent and eradicate all discrimination based on race, color, creed, national origin, handicapped status, age, religion or sex.

    This provision shall be binding on the successors and assigns of the parties hereto with reference to the subject matter of this contract.

13. The City reserves the right to award all or any part to one or more bidders.

14. (5%) deposit Enclosed $_____ see paragraph 2.

15. It is understood that the items in this proposal shall be purchased as stated on price proposal sheet. Where there is an estimated quantity being requested, the items will be purchased on an as needed basis.

16. The successful bidder(s) must maintain in stock at all items the items in this contract in sufficient quantities to ensure quick delivery on replacement items. The City of Rocky Mount reserves the right to inspect the facilities of each bidder before awarding the contract.

17. Contract or Purchase Order shall be for a one time purchase, or for the period of time noted in the specifications or on the purchase order.

18. North Carolina General Statues, specifically 160A-20.1 (b), prohibit the City from entering into contracts with contractors and subcontractors who have not complied with the requirement of Article 2 of Chapter 64. The contractor shall submit the E-Verify Affidavit, located in the Bid Proposal section, with their bid. Contractor(s) awarded the contract shall be responsible for ensuring that their subcontractors meet the E-Verify requirements. Bids that do not include this Affidavit will be considered non-responsive.

19. The City of Rocky Mount reserves the right to cancel the contract at any given time, by giving the vendor a thirty (30) day written notice.

In compliance with the above request for bids, and subject to all the conditions thereof, the undersigned offers and agrees, if this bid is accepted within 30 days from the date of the opening, to furnish any or all of the items upon which prices quoted, at the price set opposite each item, and unless otherwise specified, within _____ days, after receipt of order, delivery F.O.B. Rocky Mount, N.C.

Discounts will be allowed for prompt payments as follows:

10 calendar days _____ percent 15 calendar days _____ percent
20 calendar days _____ percent 30 calendar days _____ percent

Bidder: _____ Address: _____
By: _____ Telephone No. : _____
Authorized To Sign

Title: _____ Fax No. : _____
Date: _____

PRICE PROPOSAL SECTION

PROPOSAL FORM FOR SINGLE PRIME BIDS
FOR
Rocky Mount City Hall & Police Department Air Handler and Pump Replacements

City of Rocky Mount
Rocky Mount & Police Dept. Air Handler and Pump Replacements
Rocky Mount, NC

Contract: _____

Bidder: _____

Date: _____

The undersigned, as Bidder, hereby declares that the only person or persons interested in the Proposal as principal of principal is or are named herein and that no other person than herein mentioned has any interest in this Proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. The Bidder further declares that he has examined the site of the Work and the Contract Documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed.

The bidder proposes and agrees if this Proposal is accepted to contract with the City of Rocky Mount, in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation, and labor necessary to complete the Rocky Mount City Hall & Police Department Air Handler and Pump Replacements, in full accordance with the plans, specifications, and contract documents, to the full and entire satisfaction of the City of Rocky Mount with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and Contract Documents for the sum listed on the proposal page.

The Bidder further proposes and agrees hereby to commence work under this contract on a date to be specified in a written order of the City of Rocky Mount and shall fully complete all work within the established days from date of commencement established in a Notice to Proceed.

MWBE Good Faith Effort Documentation Included: YES: _____ NO: _____

PRICE PROPOSAL
FOR
ROCKY MOUNT CITY HALL & POLICE DEPARTMENT AIR HANDLER AND PUMP REPLACEMENTS

I have reviewed the bid specifications and drawings for the Rocky Mount City Hall & Police Department Air Handler and Pump Replacements contract. My total cost to provide all labor, materials, new equipment and hardware, supplies, insurances, training and all else needed is as follows:

Project 1 – CITY HALL $_____

AIR HANDLER:

Namebrand: _____ Model: _____

Type: _____ Manufacturer: _____

PUMP REPLACEMENTS:

Namebrand: _____ Model: _____

Type: _____ Manufacturer: _____

Project 2 – POLICE DEPARTMENT $_____

AIR HANDLER:

Namebrand: _____ Model: _____

Type: _____ Manufacturer: _____

PUMP REPLACEMENTS:

Namebrand: _____ Model: _____

Type: _____ Manufacturer: _____

Delivery Days needed for the air handler and pumps: _____
Installation Days needed to complete the installation: _____

GRAND TOTAL COST $_____

If awarded the contract we can start on _____ and complete the project in _____ days. The City reserves the right to request reference as needed.

Signature: _____

Company Name: _____

Address: _____

E-mail Address: _____

Telephone: _____

Fax: _____

Service for the air handler and pump replacements installation will be provided out of our _____ location.

Bidders are to supply all available brochures and other literature available for their chiller for evaluation purposes.

Contractor's License Number: _____

****5% BID BOND – The 5% bid bond amount is to be based on the TOTAL COST for the BASE BID. Grand Total Cost as stated on the price proposal page. The 5% bid bond is to be in the form of cash, cashiers check, certified check, or a bid bond by a surety licensed in North Carolina.**

The undersigned further agrees that in the case of failure on his part to execute the said contract and the bond within ten (10) consecutive calendar days after written notice being given on the award contract, the check, cash or bid bond accompanying this bid shall be paid into the funds of the Owner's account set aside for the project, as liquidated damages for such failure; otherwise the check, cash or bid bond accompanying this proposal shall be returned to the undersigned.

Attach certified check, cash or bid bond to this proposal.

Respectfully submitted this _____ day of _____ 20 _____.

Name of firm or corporation making bid.

_____

WITNESS: By: _____

_____ Title: _____
Proprietorship or Partnership (Owner, Partner, Pres., V. Pres)

Address: _____

_____

License No: _____

Federal ID No.: _____

(Corporate Seal)

ATTEST:

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. Only)

Addenda received and used in computing bid:

Addendum No. 1 _____ Addendum No. 3 _____

Addendum No. 2 _____ Addendum No. 4 _____

BID SECURITY & LIQUIDATED DAMAGES SECTION

CONTRACT SECTION

PROPOSAL SIGNATURE:

CORPORATION:

The Bidder is a corporation organized and existing under the laws of the State of _____ _____, which operates under the legal name of _____ _____ and the full names of its officers are as follows:

President _____

Secretary _____

Treasurer _____

Manager _____

and it does have a corporate seal. The President is authorized to sign construction proposals and Contracts for the company by action of its Board of Directors taken _____, a certified copy of which is hereto attached. (Strike out this last sentence if not applicable.)

PARTNERSHIP:

The business is a partnership consisting of individual partners whose full names are as follows:

_____ _____

_____ _____

_____ _____

The partnership does business under the legal name of

_____

INDIVIDUAL:

The Bidder is an individual whose full name is:

_____

And if operating under a trade name, said trade name is as follow:

_____

(SIGN BELOW)

Dated: _____, 20 _____

_____

Legal Entity

(SIGN HERE) By: _____

(PRINTED NAME): _____

Telephone No. ( ) _____

Subscribed and sworn to before me this _____ day of _____, 20___.

_____

Notary Public

My Commission Expires:

_____

EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this Contract the Contractor agrees as follows:

a. The Contractor will not discriminate against any employee or applicant because of race, color, religion, sex or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to race, color, religion, sex or national origin. Such action shall include but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of the nondiscrimination clause.

b. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

c. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Contract understanding, a notice, to be provided, advising the labor union or worker's representative of the Contractor's commitment under the Equal Employment Opportunity Section of this Contract and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

d. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further OWNER Contracts.

e. The Contractor will include the provisions of this section in every subcontract or purchase order unless exempted by rules, regulations or orders of the OWNER so that such provisions will be binding upon each Subcontractor or vendor.

(Use the following form for signatures by a CORPORATION);

_____
Corporate Name

ATTEST:

_____ _____
(Assistant) Secretary (Vice) President

(CORPORATE SEAL)

(Use the following form for signatures by and INDIVIDUAL):

BY: _____ (Seal)

WITNESS:

_____

(ACKNOWLEDGE OF THE ABOVE SIGNATURE MUST BE NOTARIZED USING FORM ON THE FOLLOWING PAGE).

ACKNOWLEDGEMENT

(See the following form for acknowledgement signature by a Corporation):

NORTH CAROLINA (Enter correct State and County if different than shown).

_____ COUNTY

I, _____, a notary public in and for the aforesaid State and County, certify that _____ personally appeared before me this day and acknowledged that he is (Asst.) Secretary of _____, a corporation and that by authority duly given and as the act of the corporation, the foregoing instrument was signed in its name by its (Vice) President, sealed with its corporate seal, and attested by himself as its (Asst.) Secretary.

WITNESS my hand and notarial seal this _____ day of _____, 20 ____.

_____
Notary Public

My commission expires _____
(SEAL)

(Use the following form for acknowledgement signature by a partnership or an individual).

NORTH CAROLINA (Enter correct State and County if different Than shown).

_____ COUNTY

I, the undersigned Notary Public, do hereby certify that _____, Personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

WITNESS my hand and notarial seal this _____ day of _____, 20 ____.

_____
Notary Public

My commission expires_____
(SEAL)

NONDISCRIMINATION CLAUSE

It is specifically agreed as part of the consideration of the signing of this Contract that the parties hereto, their agents, officials, employees or servants will not discriminate in any manner on the basis of age, handicap, race, color, creed, sexual orientation or national origin with reference to the subject matter of this Contract, no matter how remote.

This provision being incorporated for the benefit of the City of Rocky Mount and its residents may be enforced as set out in said ordinances, enforcement of this provision shall be by action for specific performance, injunctive relief, or other remedy as low provided.

This provision shall be binding on the successors and assigns of the parties hereto with reference to the subject matter of this Contract.

(Use the following form for signatures by a Corporation):

_____
Corporate Name

ATTEST:

_____ BY: _____
(Assistant Secretary) Vice President

_____ BY: _____
(Printed Name) (Printed Name)

(Corporate Seal)

(Use the following form for signatures by an INDIVIDUAL):

BY: _____ (SEAL)

_____
(Printed Name)

WITNESS:

_____

_____
(Printed Name)

NON-COLLUSIVE AFFIDAVIT

State of _____)
)ss.
County of _____)

_____ being first duly sworn disposes and says that:

(1)	He is the _____ (Owner, Partner, Officer, Representative of Agent)
	0f _____ the BIDDER that has submitted the attached BID;
(2)	He is fully informed respecting the preparation and contents of the attached BID and of all pertinent circumstances respecting such BID;
(3)	Such BID is genuine and is not a collusive or sham BID;
(4)	Neither the said BIDDER nor any of its officers, partners, owners, representatives, employees or parties in interest, including this affiant, have in any way colluded, conspired, connived or agreed, directly or indirectly, with any other BIDDER, firm, or person to submit a collusive or sham BID in connection with the Contract for which the attached BID has been submitted; or to refrain from bidding in connection with such Contract; or have in any manner, directly or indirectly, sought by agreement or collusion, or communication, or conference with any Bidder, firm, or person to fix the price or prices in the attached Bid or of any other BIDDER, or to fix any overhead, profit, or cost elements of the BID price or the BID price of any other BIDDER, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against (Recipient), or any person interested in the proposed Contract;
(5)	The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the BIDDER or any other of its agents, representatives, owners, employees or parties in interest, including this affidavit.

BY _____

ITS _____
(Title)

Subscribed and sworn to before me this the _____ day of _____, 20 _____.

_____
Notary Public

My Commission Expires:

_____

END OF AFFIDAVIT

MWBE AFFIDAVIT FORMS SECTION

Identification of Minority Business Participation

I, _____
(Name of Bidder)

do hereby certify that on this project, we will use the following minority business enterprises as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address and Phone #	Work type	* Minority Category

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (D)

The total value of minority business contracting will be ($)_____.

Attach to Bid Attach to Bid Attach to Bid Attach to Bid Attach to Bid Attach to Bid Attach to Bid Attach to Bid

State of North Carolina AFFIDAVIT A-Listing of Good Faith Efforts

County of _____
(Name of Bidder)

Affidavit of _____
I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 1.0101)

- ☐ 1 – (10 pts) Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- ☐ 2-(10 pts.) Made the construction plans, specifications and requirements available for review by prospective minority businesses or providing these documents to them at least 10 days before the bids are due.
- ☐ 3 – (15 pts) Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- ☐ 4 – (10 pts) Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- ☐ 5 - (10 pts) Attended prebid meetings scheduled by the public owner.
- ☐ 6 - (20 pts) Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- ☐ 7 - (15 pts) Negotiated I good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- ☐ 8 – (25 pts) Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- ☐ 9 – (20 pts) Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- ☐ 10 – (20 pts) Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority businesses commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____
Signature: _____
Title: _____

Seal

State of North Carolina, County of _____
Subscribed and sworn to before me this _____ day of
_____ 20 _____
Notary Public _____
My commission expires _____

State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract With Own Workforce

County of _____

Affidavit of _____
(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____ contract.
(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer:_____

Signature: _____

Title: _____

Seal

State of North Carolina, County of _____
Subscribed and sworn to before me this _____ day of _____ 20 _____
Notary Public _____
My commission expires _____

State of North Carolina – AFFIDAVIT C – Portion of the Work to be Performed by Minority Firms

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by minority businesses as defined in GS143-128.2(g) is equal to or greater than 5% of the bidders total contract price, then the bidder must complete this affidavit. This affidavit shall be provided by the apparent lowest responsible, responsive bidder within 72 hours after notification of being low bidder.

Affidavit of _____ I do hereby certify that on
(Name of Bidder)

_____
(Project Name)

Project ID# _____ Amount of Bid $_____

I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below.

Attach additional sheets if required

Name and Phone Number	*Minority Category	Work description	Dollar Value

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (D)

Pursuant to GS 143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

Seal

State of North Carolina, County of _____
Subscribed and sworn to before me this _____ day of
_____ 20 _____
Notary Public _____
My commission expires _____

State of North Carolina **AFFIDAVIT D** **Good Faith Efforts**

County of _____
(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 5% participation by minority business is not achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:
(Name of Bidder)

Affidavit of: _____
I do certify the attached documentation as true and accurate representation of my good faith efforts.

Name and Phone Number	*Minority Category	Work description	Dollar Value

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (D)

Documentation of the Bidder's good faith efforts to meet the goals set forth in these provisions. Example of document includes, but is not limited to, the following evidence:

A.	Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State of each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact and location, date and time when quoted must be received.
B.	Copies of quotes or responses received from each firm responding to the solicitation.
C.	A telephone log of follow-up calls to each firm sent a solicitation.
D.	For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
E.	Documentation of any contacts or correspondence to minority business, community or contractor organizations in an attempt to meet the goal.
F.	Copy of pre-bid roster.
G.	Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
H.	Letter detailing reasons for rejection of minority business due to lack of qualification.
I.	Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit or joint pay agreements to secure loans, supplies or letter of credit, including waiving of credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

Seal

State of North Carolina, County of _____
Subscribed and sworn to before me this _____ day of _____ 20 _____
Notary Public _____
My commission expires _____

APPENDIX E

MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor/Architect: _____

Address & Phone: _____

Project Name: _____

Pay Application #: _____ Period: _____

The following is a list of payments to be made to minority business contractors on this project for the above-mentioned period.

Firm Name	*Minority Category	Payment Amount	Owner Use Only

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (D)

Date: _____ Approved/Certified By: _____
Name

_____
Title

_____
Signature

** THIS DOCUMENT MUST BE SUBMITTED WITH EACH PAY REQUEST & FINAL PAYMENT **

MWBE AFFIDAVIT FORMS SECTION

PERFORMANCE BOND

This Bond is executed on _____, 20 _____.

The name of the PRINCIPAL is _____ (1)

a _____ (2)

The name of the SURETY is _____

_____

The CITY OF ROCKY MOUNT, NORTH CAROLINA is the CONTRACTING BODY.

The amount of the Bond is _____

_____ Dollars ($ _____)

KNOW ALL MEN BY THESE PRESENTS, that we, the PRINCIPAL and SURETY above names, are held and firmly bound unto the above named CONTRACTING BODY, hereinafter call the Contracting Body, in the penal sum of the amount stated above in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas, the Principal entered into a certain Contract with the Contracting Body, dated the _____ day of _____, 20 _____ for work described by Plans and Specifications prepared by Lighthouse Engineering, Raleigh, North Carolina, herein called and referred to as the Engineer, a copy of said Contract is hereto attached and made a part hereof for the renovation of:

CITY OF ROCKY MOUNT
Rocky Mount City Hall & Police Department Air Handler & Pump Replacements

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said Contract during the original term of said Contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the SURETY being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

PAYMENT BOND

This Bond is executed on _____, 20 _____.

The name of the PRINCIPAL is _____ (1)

a _____ (2)

The name of the SURETY is _____

_____

The CITY OF ROCKY MOUNT, NORTH CAROLINA is the CONTRACTING BODY.

The amount of the Bond is _____

_____ Dollars ($ _____)

KNOW ALL MEN BY THESE PRESENTS, that we, the PRINCIPAL and SURETY above names, are held and firmly bound unto the above named CONTRACTING BODY, hereinafter call the Contracting Body, in the penal sum of the amount stated above in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas, the Principal entered into a certain Contract with the Contracting Body, dated the _____ day of _____, 20 _____ for work described by Plans and Specifications prepared by Lighthouse Engineering, Raleigh., North Carolina, herein called and referred to as the Engineer, a copy of said Contract is hereto attached and made a part hereof for the renovation of:

CITY OF ROCKY MOUNT

Rocky Mount City Hall & Police Department Air Handler & Pump Replacements

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said Contract during the original term of said Contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the SURETY being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

ATTEST:

_____
(Principal) Secretary
(SEAL)

_____
Principal

By: _____(3)

_____
(Address)

_____
Witness as to Principal

_____
(Address)

_____
(Surety)

ATTEST:

_____
N.C. Resident Agent
(SEAL)

By: _____
Attorney-in-Fact

_____
Witness as to Surety

_____
(Address)

_____
(Address)

NOTE: Date of Bond must not be prior to date of Contract

(1) Correct name of Contractor
(2) A Corporation, a Partnership or an individual, as the case may be
(3) If Contractor is a Partnership, all partners should execute Bond